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**WORLD**

**THIS QL MEANS  
BUSINESS**  
One Man's System

**ARTIST OF THE  
YEAR 1990**

Competition this month

**SUPERBASIC**  
The Graphic Environment

**SOFTWARE FILE**  
The Fugitive  
Qualsoft Terminal Emulator  
Stock Accounting System





SINCLAIR



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Back issues are available from the publisher price £2 U.K., £2.75 Europe. Overseas rates on request. Please telephone 089 283 4783 to check availability.

Published by Focus Magazine Ltd., London. S M Distribution, Streatham, London SW1. 01 677 8111. Subscription information from: TIL, PO Box 74, Paddock Wood, Tonbridge, Kent TN12 6DW. £21.00 U.K., £24.70 Europe, Middle East £25.80, Far East £27.60, Rest of World £26.20, U.S.A. \$45.00. Airmail rates available on request 0892 834783. Typesetting by Adtec Typographics, Britannia Court, Basildon, Essex. Tel: (0268) 591110. Printing by Southernprint Ltd. Sinclair QL World is published on the fourth Wednesday preceding cover date.

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## NEXT MONTH INTERNATIONAL CRICKET

The popular game in two versions is reviewed in Software File.

## FANCY STUFF

Part 2 of our article on how to mix print styles.



# QL

# S

# C

# E

# N

# E

## Spell Checker

Following the release of *QL Playwright* reviewed in *QL World*, October, 1989, *QL Playwright Spell Checker*, dedicated to QL Playwrite and other ASCII texts is now available.

The program has a special algorithm to deal with abbreviated dialogue forms such as 'I'd' and 'can't' normally ignored by spell-checkers, removing one barrier to the serious use of spell-checker programs for other than report-writing and news

reports – that the spell-checker is ignorant of many terms and forms used in everyday speech, jargon and commercial practice.

QL Playwrite Spell Checker can work in two modes, interactive or background. The interactive mode allows the user to correct spelling mistakes, view the dictionary and remember dictionary omissions. In Background mode, the program builds a file with the discrepancies between the dictionary and the script.

The dictionary, which contains 8,000 words, can be loaded quickly and extended easily by a separate dictionary update program.

Spell Checker costs £10 and is available only on 3.5in. disc for expanded QLs; Playwright can be supplied on Microdrive for £14.99 if a Microdrive is provided by the purchaser; otherwise it is supplied on disc. Cheques should be payable to **E.J. Wilce and sent to 48 Liddington New Road, Guildford, Surrey GU3 3AH.**

## Pocket Computer

EmSoft in the United States is to release two new unprotected programs designed to run under Archive. *DBEasy*, produced by Wood and Wind Computing, is described as an Archive front-end allowing user access to most database functions without learning Archive programming. *DBEasy* costs \$21.95 on 5.25in. disc and \$23.95 on mdv.

*Trust\_Fund*, a program by EmSoft, is an equity and income management program designed to combine various sources of income and portfolios in a single report to provide various sources of income and portfolios in a single report to provide a statement or projection of financial worth. It can be used, according to EmSoft, for functions as complex as tracking investments or as simple as balancing a chequebook.

It is not clear from current information whether it can be used to assess the comparative worth of potential investment portfolios. *Trust\_Fund* costs \$24.95 on disc, \$26.95 on mdv.

According to the EmSoft price list, all prices should have an added \$2.50 per program for overseas airmail delivery, five percent Massachusetts sales tax and four percent for credit card purchases, in that order.

*QL World* hopes to publish reviews of the two programs in due course.

Orders and enquiries to **EmSoft Division, Estate Management Services, PO Box 8763, Boston, MA 02114-8763, U.S.A.** EmSoft will also market, advertise and promote other independent programs by arrangement.

## Codework mods

Creative Codeworks has co-operated with QJump and PDQL to maintain compatibility of its programs with all standard Qdos utilities and applications, a major design specification applied by the company.

Both QJump and Creative Codeworks produce products which extend the QL performance while retaining compatibility with older programs. This has led to some conflict between enhancement packages developed around the same time, such as *QRAM* and *Speedscreen*.

*QL World* has heard that Creative Codeworks and QJump have resolved this situation. *Speedscreen* customers receive eight versions as standard, suitable for a range of specifications. From release 1.21 onwards, version P is totally compatible with current releases of *QRAM*.

Other versions of *Speedscreen* work with *QRAM* in MODE 4 but if both MODE 4 and MODE 8 are needed the QJump utility *FIXPF* should be used to re-define the MODE command, after loading *Speedscreen* and before loading *QRAM*. That is necessary because the two programs

contain incompatible corrections to a standard QL ROM bug affecting MODE if the display device has been re-defined.

*Speedscreen* version P is a small version for MODE 4 only. Used with the *QRAM* MODE correction, it will speed scrolling and window clearing in MODE 8 as well. QJump *FIXPF* removes the spare MODE correction in other versions. *FIXPF* should not be used without *QRAM*.

### C tasks

A bug in the Metacomco QL C Compiler means that incorrect parameters are passed to Qdos devices, including the display. C programs expect the high word of register D1 to be pressed when text is output with IO, *SSTRG*. This does not affect calls to Sinclair ROM code but differs from the QL standard, affecting programs which follow that standard. A bug in the compiler library can also affect C tasks such as *PDQL DiscOver* and *Multi-DiscOver* and Digital Precision *XOver*.

To combat those problems a new C compiler library has been developed by PDQL, conforming to Qdos specifications. Versions of *Multi-DiscOver* from 2.13 onwards are compiled with the new library; corrected versions of other compiled C tasks should be available in due course from the original suppliers.

Creative Codeworks has developed a modified version of *Speedscan* for users of the Metacomco C Compiler, allowing access to fast display without obtaining the new PDQL library and re-compiling its programs.

This version, 1.29, has been developed as part of the work on an enhanced *Speedscreen* ROM in the Rebel QL hard disc system. Version 1.29 is slightly larger than earlier versions but functionally identical.

Upgrades to version 1.29 are available to registered owners of *Speedscreen* who return their master disc or cartridge to **Creative Codeworks at PO Box 1095, Harborne, Birmingham B17 0EU.** Upgrade price is £6.50 for ROM or RAM versions.



# OPEN CHANNEL

Open Channel is where you have the opportunity to voice your opinions in *Sinclair QL World*. Whether you want to ask for help with a technical problem, provide somebody

with the answer, or just sound off about something which bothers you, write to: Open Channel, Sinclair QL World, Greencoat House, Francis Street, London SW1 1DG.

## Club

Some time ago you printed my letter concerning the starting of a local QL club in my area. Although I have since received a few replies, I would be grateful if you would reprint the address so that I may expect hundreds of letters from local users like myself.

The club will concern itself with most areas of computing, although the idea behind this venture is to make it possible for local users to meet each other and make new friends.

**Brian Dickson,**  
67 Queen Adelaide Road,  
Penge,  
London SE20 7DX.

*Editor's comment: Once I was in a club which obtained some very good nation-wide publicity. The result was 500 letters through a small letterbox in Ilford in the space of two weeks. We had to answer them all. As the sage says, "Beware of asking for what you want, for you may get it."*

## Flight

Thank you for the review of *Flightdeck* in the December issue. Regarding the points you queried, the jumps in speed around 400 knots are not strictly due to a programming bug. They were in fact intended to act as an overspeed warning, drawing the pilot's

attention to the airspeed indicator. As it is regarded as a bug by the reviewer, version 1.03 of the program has been modified so that the needle remains steady at 400 knots when maximum speed is reached. It should, however, be noted that in a real aircraft that speed would not be approached as it requires the continuous application of full power in level or diving flight.

The unconventional appearance of the artificial horizon results from the need to optimise speed of operation. Rather than having to repeat the horizon calculations for the artificial instrument, a 'patch' of the view out of the cockpit window is copied directly into the artificial horizon area, hence the green and white shading.

I accept the comment about the 3D views appearing flat although, of course, they move within a 3D co-ordinate system. The 'scenery' supplied with the program includes one non-flat landmark, a crude pyramid representation of Mount Snowdon.

**Bernard Denchfield,**  
Deltasoft Computer Software,  
Bristol.

## Stuck

With regard to what I wrote in my article One Man's System in the November, 1989 issue about PDQL supplying a driver for the 8056, unfortunately the driver supplied does not work with my Serial 8055. I have written to PDQL with a blank disc for a copy of GraFIX in case mine is at fault.

Running GraFIX with a desk-top publisher input gives a page size of 8 by 8.848in. when it should be A4, regardless of which printer driver supplied with GraFIX is used. Since GraFIX apparently defaults to DTP it is odd that it

cannot produce an A4 page. The driver for the Serial 8056 produces illegible garbage. I have sent sample printouts from DTP through GraFIX using the 8056 to the publisher, Digital Precision. At the time of writing I have not received a reply from either company.

**James McGreenin,**  
Alva,  
Scotland.

## Sad

I am deeply saddened to see that the QL is apparently falling behind such computers as the ST and the Amiga in games software. I think that the QL could compete with those computers if quality games were available for it. I do not mean that no quality games are available but the lack of such famous games as *Matchday*, *Decathlon*, *Outrun*, *Double Dragon*, and so on is helping the demise of the QL.

If all the games makers were to start well-known games for the QL the public would find it more appealing because of its cheap price and good graphics.

**Darren McBride,**  
Stirling,  
Scotland.

## Editor's notebook

Back to business this month. As well as David Drysdale's description of how he forged a new career with the help of the QL, we have a thought-provoking introduction to the role of the computer business by Tony Neilsen and a handful of business and utility programs to keep the QL working as the practical tool it was intended to be.

What about the *Artist of the Year Competition, 1989*? I have been asked. the Artist of the Year Competition suffered a last-minute bumping for technical reasons unrelated to it in the December issue. Appropriately it has been re-named the *Artist of the Year Competition 1990* and now appears on page 35.

*We have received complaints from readers who have ordered programs from QL SUB and we have ourselves attempted to contact them but we have now been informed by British Telecom that their telephone has been temporarily disconnected.*

*Editor's comment: The QL has never been famous for its games, mainly because fast, colourful games are very expensive to develop but sell for a lower price than high-grade utilities. You should try some of the games which are being advertised. There is at least one games review in QL World most months.*

## List

I discovered recently that the DIR command will take a channel number, such as DIR#2, mdrv1\_\_file. This will list the directory information on channel 2.



This can be useful if you wish to compare two directories which are fairly long. They can be listed on different channels and compared directly, instead of the first listing being displaced by the second.

**P. Bennett,  
Tiverton,  
Devon.**

## Crash

I have a JM ROM QL expanded to 896K using a Trump Card and twin 3.5in. floppies. When I used a large SuperBasic program, 22K, plus three arrays of "(500, 45)", after a number of calculations the program begins to corrupt itself and then shortly afterwards crashes. The only way to get it running properly is to reduce the size of the SuperBasic program by deleting some procedures which are rarely used. It makes no difference which procedures are deleted so long as the overall size of the SuperBasic program is reduced. It is thus not the size of the program which is causing the crashes.

With the full program I have more than 700K of memory spare but it seems that the program is running out of space. What can I do to alleviate the problem?

**C. Richardson,  
Laburnham Farm,  
Flowers Green,  
Herstmonceux,  
East Sussex BN27 1RQ.**

## Better

When one investigates the 68000 processor and its capabilities and then compares it to the 8088/8086 family, it becomes apparent that the 68000 had the advantage of being designed for use with microcomputers and minicomputers in mind. The Intel 8088/8086 chips were, of course, designed for process control applications. It is therefore interesting to note, when challenged; precisely how many people are aware of the 8088/8086 limitations when they take issue with it.

Few people either know or care that the segmentation of memory on the Intel family is restrictive. They simply "know" that IBM and compati-

bles run the software they need. This, in itself, is of course a valid argument. When one takes the newer requirements into consideration, such as multi-tasking, and examines the electronic and coding requirements to enable Intel 8088/8086 and enhancements to operate beyond the megabyte limit - 768K actual - and compares this to the 68000 capabilities already existing, one begins to understand the extent and expense to which the designers must go to reach the same criteria.

While the QL is restricted beyond doubt to a level which the Motorola people probably did not intend, it is capable of multi-taking without difficulty and great expense. An example arose during the last few weeks. A businessman has two QLs and runs XChange to solve his business problems. Both are expanded to 512K or beyond, both have twin 3.5in. disc drives and both run Ice multi-tasking environment. To achieve the same level of capability and efficiency would have cost much more than what he paid, despite the high cost of adding expansion and drives to the QL and the current fall in PC prices, if he had tried going the same route with IBM PC or clone equipment. In fact, he could not have put together the requisite equipment and software to produce a single unit running multiple jobs for the cost he incurred for the two QLs.

It is probably too late now to reinstate the QL as a prime contender in the micro wars. I note that your advertisers are offering new QLs from time to time and expanded versions. The businessman I quoted had tried the Thor some time ago but was not satisfied with it and returned it, preferring the QLs he already had.

Finally, would you thank MPC Software of Nottingham which some time ago found textbooks on XChange for me to show my students - we use the IBM version. I use XChange as a primary, easy-to-use, integrated package to introduce spreadsheets, databases, word processing and integration. It is surprisingly difficult to find third-party texts for this application.

**John L. Masterman,  
Hartlepool,  
Cleveland.**

## Hot

During the recent very hot weather I was troubled by frequent lockouts as the internal temperature of my QL rose too high. I decided to investigate. The first stop was the 5V regulator, which I changed to a 2-amp version. Silly me. It is not the current capacity which will make it run cooler, because the heat is a product of the difference between input volts and output volts times the current.

Since I could do nothing about the current I tried lowering the input volts. The data sheets say that the regulator needs a minimum input of 8V, so a check on the PSU was made and, sure enough, the output was about 9.5V.

The PSU design is cunning in that it uses a silicon-controlled rectifier across which is applied an AC voltage, enabling a reasonably steady voltage with very little heat from the scr. The bad news is that the voltage cannot be reduced and will increase with heat.

Looking at the design of the QL case, it seems that cooling depends on air entering the slots under the Microdrives, flowing across the heatsink and out through the slots at the upper rear of the case. That would have worked well if the drives were not in the way.

My solution? Using two 5V regulators, or even a 2-amp one, is not the way. The heat generated is just the same and it cannot get away. Removing the regulator to the outside is feasible; it could be dangerous if knocked and putting holes in the lid is unsightly.

So it looks as if I will have to save to buy a switch-mode regulator as this, like the scr, runs with very little heat output. I am not fully convinced that the cause is really heat from the regulator. We shall see.

**A.M. Levett,  
Glastonbury,  
Somerset.**

*Editor's comment: The hot weather brought a rush of interest in preventing the QL overheating, as evinced by Dennis Briggs' recent article on the subject and other comments. We have also had another novel suggestion from a*

*reader but we are hoping for some pictures, so we will have to wait for that.*

## Touch

I am always typing without looking at the keyboard or the monitor. As we call it in the Netherlands, I am "blind typing" and I do not bother my eyes too much with looking at the screen. There is still a problem; sometimes I mistype because my hands shift sideways one keyrow. Then I have to make corrections. To avoid shifting sideways to the left, which is the most often occurring mistake, I have glued some sandpaper on the row ESC / TAB / CAPSLOCK / SHIFT / CTRL.

I wonder why manufacturers have never made a difference in fingertip feeling between the normal type/keys and the function keys, which would avoid much trouble for blind-typing persons? Of course, this is not only a QL problem but I wonder about the pound-wisdom and penny-foolishness of manufacturers.

**Dr. W. Horn,  
Bleijenburg,  
Netherlands.**

*Editor's comment: A clue to the thinking behind smooth keys is, oddly enough, given in the English name for "blind-typing", which is touch-typing. Until the advent of electronic typewriters and function keys the layout of most typewriter keyboards was identical. Typists were taught to reach every key on the keyboard and locate the correct position by feel. As most typists were women and journalists, somebody may have felt that it was good for their souls as well.*

*Since the appearance of computers, however, with a mass of extra keys round the keyboard, standard touch-typing has become more difficult and some manufacturers considerably have added a minute 'dimple' to the 'home keys' G and H, or F and J, according to your preference so that the operator can start from the correct position without looking.*

*So some manufacturers are keeping our needs in mind. We women and journalists, however, vsm yu[r rptgrvy;u eoyjpiy yjr mrrf gpt fo, [,rd]*



# THING AND THE EPROM

## INFORMATION:

**Program:** *Thing and EPROM Manager*

**Supplier:** Jochen Merz Software, Im Stillen Winkel 12, 4100 Duisburg 11, West Germany.

**Price:** £16.75, plus £2 airmail postage to the U.K.

**J**ochen Merz *Thing and EPROM Manager* is a clutch of utility programs which extend the QL, making it easier to manage code and data. Merz is a German programmer and software publisher, often seen at U.K. computer shows on Tony Tebby's QJump stand.

Things are structured areas of memory which can be shared between QL tasks. The EPROM Manager is aimed at people who have access to an EPROM programmer. It lets them put almost anything in a chip. It can configure the QL to read a BOOT file and other programs directly from EPROM, without a disc or cartridge. The package is supplied on a 225 sector 3.5in. disc with a loose-leaf A5 manual in a little black ring binder. It runs on any QL system, including unexpanded machines.

The disc holds two files of command extensions and two machine code tasks. Each task is in two versions, with English and German messages. The files are very small – 3.5K at most – and the bulk of the space on the disc is occupied by spare copies and 42K of code for the QJump QPTR environment, which provides optional overlaid display windows for the tasks.

## Translation

The manual is of 20 pages, with 10 pages on each topic. The text is clearly presented but written in technical English which sometimes seems to have lost a little in translation from German.

EPROM stands for Erasable Programmable Read-Only Memory. An EPROM is a semi-permanent memory chip which can be erased and re-programmed with special equipment. Many QL enthusiasts use the excellent QJump QEP-3 programmer which can program single chips up to 64K bytes in size. Once a chip is programmed it retains its contents indefinitely, unless the chip surface is exposed to strong ultra-violet light through a window in the top.

Associated terms include RAM – Random Access Memory – which can be read or written to but which loses its contents when the power is turned off – and ROM, a generic term for Read Only Memory, encompassing home-brewed EPROMs

**Simon Goodwin explores the QL expansion potential and reviews *Thing and EPROM Manager* from Jochen Merz Software.**

and mass-produced chips. EPROM contents can be accessed very quickly, at up to 1,875K a second so they are an ideal place to store code which extends the QL system, like *Speedscreen* or Toolkits, EPROMs are used commonly in QL disc systems where they hold the code which controls the drives. QEP-3 has its own pre-programmed 16K chips which controls the programming circuits.

EPROM prices vary widely depending on where you look. You might pay more than 30 pence per kilobyte for new 16K chips but prices can be as low as threepence a kilobyte for larger chips, often rescued from scrap equipment.

The QL design includes 320K of space reserved for Read Only Memory but much of this may already be occupied in an expanded system; 48K is used by the Sinclair system ROMs or the Q-View *Minerva* alternative. The *Miracle Trump Card* usurps another 256K for extra RAM, leaving only 16K unused, accessible via the ROM port at the back of the QL. Many add-ons work only if connected there, including the *Miracle Midi* and hard disc units, Metacomco compiler dongles, the MCS *Mult-ROM* and the Sandy CP/Mulator.

Standard 640K QL systems reserve 256K at the top of the QL megabyte memory map. That space is shared by ROMs and add-ons like EPROM programmers and disc interfaces. Typical QL floppy controllers use between 8K and 32K of controlling ROM, plus a few bytes of 'control ports' to send data to and from the drives. The Rebel hard disc controller uses 32K of ROM and 32K of static RAM as a buffer to speed disc access.

Expansion circuitry on a 640K QL should share this 256K between add-ons but you still need sufficient sockets to plug in everything. The CST RAM Plus has space for four 32K EPROMs on-board. SPEM makes a card with sockets for three 64K EPROMs and a through connector for other peripherals.

If you need more full-sized expansion slots, ask Adman Services for a simple unbuffered expansion cable, search for the CST Q+4 four-slot buffered expander, or try the Rebel Electronics long-awaited four-way buffer. Buffered units

cost more but boost the QL signals, improving reliability.

The EPROM Manager takes normal QL files – like tasks, extension commands, text and data – and combines them into a composite image which can be programmed into ROM. This involves added extra data so the QL system can recognise and use the ROM. Every ROM must have a header. This includes a standard prefix, a 'banner' message, displayed when you re-set the machine, and pointers to be initialisation code and details of new commands.

## Image

The EPROM Manager assembles a ROM image from files on disc or Micro-drive. A control file lists all the component files and how they are to be used. The control file contains ASCII text, so it is difficult to produce it with Quill. You should use a plain text editor such as *Spy*, *The Editor*, *ED*, or Merz *QD*. At a pinch you can create the file with Basic PRINT statements.

The first line of the control file gives the names of the output file, the ROM size in kilobyte units, and the banner, which is normally a copyright notice. The banner may contain up to 35 characters for one MODE 8 line. A new line character is appended automatically.

Normally the first line starts with the word ROM, indicating that the composite file will be used to make a ROM but you can put RAM instead, in which case the program makes a file which can be loaded and called in RESPR memory, as if it were a toolkit routine. The rest of the control file lists the components for the composite output file. There is no limit to the number or mixture of components, other than available memory space.

The first three characters of each line indicate the type of component, followed by the file name from which it is to be read. The simplest type is BIN, short for BINARY. This indicates a code file which you want initialised straight away. For instance:

```
BIN FLP1__USE__CODE
```

might add the DIY Toolkit USE command to SuperBasic.



# ROM MANAGER

Often one code file will contain many extension commands; unless they have very obscure names it is possible that some will clash with variable names in your SuperBasic programs. It is useful to be able to put a file of extensions in ROM but delay linking them to Basic until a certain command is typed:

```
CMD FLP1__DIY__CODE,DIY__EXT
```

That instruction tells the EPROM Manager to include the commands in the file `DIY__CODE` but not to link them to Basic until the command `DIY__EXT` is typed. Some versions of SuperToolkit 2 work this way; the toolkit commands are not available until you enter `TK2__EXT`.

The 'JOB' prefix lets you include a task in ROM but it will work only with tasks designed to run from ROM – that excludes *BCPL*, *Turbo*, *Supercharge* and most hand-written machine-code tasks but it works with Merz programs and tasks compiled with later versions of *Q-Liberator*.

This instruction tells the EPROM Manager to include a copy of its own code which can be started with the command `MANAGER`:

```
JOB FLP1__EPROM__MANAGER__  
ENGLISH,MANAGER
```

You can include any QL data file in EPROM and read it like a device later, using the 'DEV' prefix:

```
DEV FLP1__STARTUP__BAS,BOOT
```

The examples mean that any attempt to open the file 'BOOT', including the QL start-up sequence, will read data from a ROM copy of the file `FLP1__STARTUP__BAS`. You can use a DEV name anywhere a normal QL input device would appear, for instance in `COPY`, `LRUN` or `MERGE`.

Sadly, Merz restricts the length of DEV names to six characters or fewer, so you cannot put Psion data files in ROM; there is no room for the default device name and the mandatory three-character extension. It might be pleasant to put `PRINTER__DAT` in ROM but it is not allowed.

The THG instruction allows a file to be put in ROM as a Thing, but this works only if you initialise HOTKEY system 2.03 or better before the ROM. The EPROM Manager works fairly quickly. It asks you for the name of the control file, then lists the lines one by one on the screen as they are processed. A standard QL error message appears if a mistake is found and you can supply a new input file name.

The Manager has a serious bug. It

assumes that all the files you nominate will fit into the specified ROM space, along with the information it adds. If the total is too large for the chosen space the program crashes and the QL must be re-set.

It is easy to be caught by this bug as the manual does not state the amount of extra space needed and EPROM Manager seems to add more than is strictly necessary. I attempted to combine two files of a little less than 16K into a 16K ROM and my QL crashed. I re-started, specifying 18K of space this time, and the Manager produced a file of 16,400 bytes – just too large for a 16K chip, which can hold 16,384 bytes. The next available chip size is 32K.

## Re-entrant

I tried removing the banner text and specifying 16K again but the QL still crashed. EPROM Manager allocates space for the banner even if it is not needed. Further, it uses more space than it should. The space needed is not documented but I calculate a minimum overhead of 60 bytes, plus 14 for each BIN part.

In theory, the overhead should be no more than 42 bytes with a full banner, plus four extra bytes for each BIN part. I wrote a short Basic program to combine my files and add a ROM header and ended up with a 16,362-byte composite file. The difference is small but in this case it was the difference between fitting the programs into 16K or crashing the QL and needing a 32K chip.

The facilities of EPROM Manager are not exceptional. The July, 1988 *QL World* listed a *Custom Kit* program which merges extensions to be loaded into resident procedure space, and Liberation Software sells *RPM*, a program to merge tasks, extensions and a BOOT program into ROM. *RPM* is designed to process *Q-Liberator* files but it also works with *Turbo* and *Supercharged* tasks, copying to RAM as required.

The 1/2K EPROM Tester is simple but useful. It can be difficult to test a ROM. You must blow a chip, switch off, plug in the new ROM and re-start. If it does not work the machine usually stops dead or ignores the ROM altogether. Merz has found a way to check your code and ensure that the image does not try to modify itself, in which case it will not work once in ROM.

`ROM__LOAD` takes a file created by the EPROM Manager and loads it into RAM. It prints the banner, checks all the code before and after loading and reports 'sorry, not ROM-able' if it finds any

changes. This is not a foolproof test on its own.

Some code files modify their contents only when particular action is taken and it is difficult to know how to be sure of exploring all the paths in a code file. For instance, current versions of Turbo Toolkit re-configure themselves in `SEARCH__MEMORY` and `DEFAULT__DEVICE` but the other 60 or so commands leave the code alone.

The command `ROM__TEST` performs a third check of the code, after testing, and reports 'probably ROM-able' if it is unchanged. You must re-set the computer after using this command.

All my *QL World* DIY Toolkit routines will run in ROM apart from the MEM device and the timing routines, which use internal data areas to link with the system. The next release of Turbo Toolkit code will run in ROM and will be noticeably longer.

The Split File task circumvents a limitation of most QL set-ups. The QEP-3 programmer fits into the big socket at the end of the machine, so it is impossible to use it at the same time as RAM or disc extensions unless you have expansion units with a spare port.

Split file divides a file of more than 64K into portions which can be programmed piecemeal on a 128K QL. It is a trivial task, less than 1K long, and it is no use if you want to blow a big 16-bit ROM for a Thor or ST. A 128K 16-bit ROM uses two 64K chips, with the odd bytes in one and the even bytes in the other. QEP-3 will split them for you if you have memory expansion to load the whole 128K; otherwise you must resort to `INKEY$` and a simple but slow Basic program. Split file does nothing which cannot be done with a few lines of Basic.

Both tasks show a heading and use non-destructive windows if the 21K QJump pointer environment is loaded. The heading is incomplete if you run the tasks in MODE 8 but they still work. If you omit the pointer code there is no heading and the task windows over-write Basic ones, as usual.

The EPROM Manager is useful if you own an EPROM programmer and have resisted the temptation to clog your expansion ports with a 768K Trump Card. *Supercharge* and *Turbo* users may prefer the Liberation Software *RPM* but that does not include the mysterious Thing Manager.

Things are areas of memory with names and version numbers. They may be stored in RAM or ROM. They can contain code or data, such as Basic programs or character fonts. Things can be shared between tasks or 'private' to a particular task. Merz supplies a 3K file which adds eight new commands to create and control Things.

`TH__LOAD` reads a Thing from a file into memory. If a device name is not specified the `DATA__USE` default is

*Continued on page 43*



# TROUBLE

A P R O B L

Bryan Davies covers a number of recurring technical problems and also looks at consumer queries and the positive and negative responses he has encountered recently.

As a member of a relatively small group – which is what a QL user is – it is sometimes easy to become spoiled. You can often get personal attention, of a kind which is unlikely to be forthcoming when you are part of a much larger community. The comment is prompted by recent frustrating experiences with various programs on the QL and PC. It is not intended to imply that support for the customer by PC software houses is poor – I have found it surprisingly good – but there is inevitably a remoteness which prevents you having your personal complaints about a program being dealt with directly.

Having recently spent several weeks trying to create printer driver routines for the Kaga-Taxan KP-810 printer, for use with two expensive PC word processing programs, the frustration level was high when *FlashBack Special Edition* arrived for review. A variety of small problems with the Report Generator part of the program resulted in several telephone calls and a letter to the ever-cheerful duo who do the spade work on this program.

The upshot is that everything has been explained, or dealt with, promptly – except, of course, for the inability of Quill to deal neatly with changes of character width – and I doubt if anyone will fix that problem now. Some minor changes are being made to the program and they should prevent squawks from users like me in future.

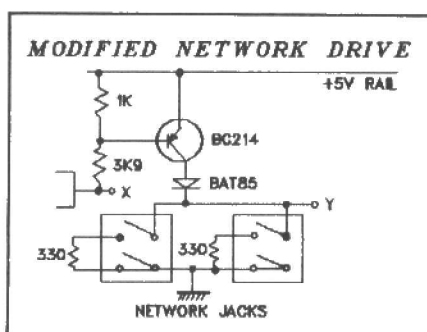
## Service

A local friend never hesitates to call everyone of whom he can think whenever he has a problem with his QL and, to the best of my knowledge, he has yet to fail to obtain personal service from anyone. That may partly be a question of techniques but it indicates that the people who matter generally stand behind their products.

The subject of being spoiled for atten-

tion was highlighted in another way recently by a call from **Doug Dewey**, a QL enthusiast in the U.S.A. I know transatlantic calls are cheaper on Sundays but that call must have cost about the same as a second-hand QL. Dewey has several QLs and a variety of add-on units such as an EPROM programmer, expansion memory and the CST Plus-4 expansion. It was the latter about which he called. There is little I know about it, so can any readers provide documentation on it? In particular, about use of the parallel port.

Those within cheap-rate calling distance of QL suppliers and programmers should consider themselves fortunate not to have to foot large telephone bills whenever a problem arises with a QL. Distance also tends to compel users to do things they might otherwise leave to others; Dewey mentioned two associates,



one who had made his own 512KB expansion memory, and the other who had one of the Megabyte expansion units from Germany working – has anyone else done this?

He had indulged in the exacting activity of changing RAM chips, because he could not cure lock-ups any other way. All users who feel capable of attacking such projects and need someone with whom to discuss them should be members of Quanta, the QL Users' Group.

The American reader mentioned wanted to talk to Graham Priestley, since

he is the obvious person to answer questions about CST hardware. Priestley has recently provided more comment on a previous enquiry, about the EPROM kit CST sold for its expansion board. The kit consisted of two ICs, one transistor and various resistors and capacitors. When installed, it allowed the top 128KB of the QL memory map to be accessed as  $4 \times 32\text{KB}$  or smaller segments, on EPROM.

Common EPROMs will work in the first slot without difficulty but using more than one may result in problems, because of the limitations of the address decoding provided. CST used to offer the service of moving portions of code from small EPROMs to larger ones to circumvent this difficulty. A further complication when investigating the use of EPROMs is that some earlier Qdos ROM versions do not access the expansion memory area correctly and do not find code in the upper 128KB at all; the answer to this is to fit later ROMs.

## Erratic

Erratic behaviour will be familiar to those who have tried networking to any serious extent and Priestley confirms that a large number of QL circuit boards were unreliable in this area. The trouble stems from the transistor used to drive the line. There are no doubt many people who will assert that Uncle Clive would buy components from any source if the price was low enough and the ZTX510 used for the network fits that description.

It is a high-speed saturated switch but there is not enough base drive in the circuit to ensure saturation and the line voltage varies with the transistor gain, rather than being constant. Replacing one ZTX510 by another is not a sure-fire cure, because the tolerance on gain is so wide; the plastic version is somewhat better than the metal one, though.

A better solution is to use a BC214 instead, as it has twice the gain of the ZTX510 and is cheap and easy to obtain. A circuit is shown in the illustration; I have not tested it yet so do not complain if it is not 100 percent correct. Test it by grounding the point marked 'X'; the voltage at 'Y' should be a minimum of 3.6V DC for a network to be reliable.

When more than two QLs are networked turning off just one kills the whole network and you have to re-set all the remaining machines. That is because no provision is made for the reverse voltage from the ZTX on the 'dying' machine to be



# SHOOTER

E M S O L V E D

kept from lowering the whole network voltage. A diode in series with the transistor would stop this but it reduces the normal line voltage further; using the BC214 allows enough 'spare' voltage for this to be acceptable, provided a low forward voltage diode such as the BAT85 is used.

QL networks depend on good power supplies and introducing additional loading in the form of expansion boards can cause problems. Sinclair made various changes to the main PCB to improve the behaviour of the earth and power rails; if you find odd lengths of wire tacked on to your PCB they may be for that purpose. If you want another possible source of trouble, consider using different mains socket for the QLs; this can introduce hum via the braid of the network cable. It does not show until you use an earthed monitor or disc drive at both ends of the network, the QL normally not being earthed at all.

A footnote to the recent article on inking ribbons – check if the position at which the print mechanism hits the ribbon is at the middle. If it is off-set slightly, it is worth removing the ribbon from its case and turning it over to get appreciably more life from a new part of the ribbon. I have been doing this for years with the ribbons for my Kaga-Taxan; this type of ribbon also has an absorbent roller which can be inked directly.

Some of my ribbons date from the early days of my QL system and odd ones are only now becoming too worn to be worth keeping. Re-inking proved invaluable recently when a supplier – not from the QL scene – took about three months to admit ribbons ordered were not in stock, despite regular promises that they would be sent 'soon'.

## Proceedings

County Court proceedings looked to be the only way to recover the money but, to my surprise, a letter to Access produced a credit to my account for the full amount, and advice that the matter was being checked. I had thought it was not normally worth complaining to a credit card company unless the amount was more than £100 but the amount concerned was only £25, so it appears a complaint may be worthwhile with even a small loss.

The other obvious avenues – writing to the local Trading Standards Officer and the magazine carrying the supplier's advertisements – have produced no

response. As a result of this experience I tried another mail order supplier – see information box – and the same type of ribbon arrived within four days of my order. Ribbons for the KP-810 and the Canon PW1156 and 1080 cost £15.64 for five, including postage and VAT.

Still on the subject of this printer, a request for help in the Quanta group magazine brought a speedy response from **Peter Jones**, who pointed out that the default right margin on the KP-810 is set to give only 132 columns when condensed print is in use. That is done, presumably, because that is the standard width used in some accounting documents. As it results in not being able to print condensed characters to the same point that 10- or 12-pitch characters can be printed, it was causing a ragged margin on various documents.

The solution is to send the ESC "Q" + n codes to the printer whenever condensed print is to be used; set n to 137, the maximum number of characters which

*"The obvious avenues – writing to the Trading Standards Officer and the magazine – produced no response."*

can be printed. This was another example of how little notice one sometimes takes of instruction books, since the point was made clearly in the description of the right margin setting function.

Note that the settings need to be made in the Preamble of the driver routine; condensed print (ESC SI) has to be inserted before ESC "Q" + 137 because the latter has no effect unless condensed print is already set. If your default print size is, say, Elite 12-pitch, you should then put the codes for that (ESC "M") after the margin setting. If you mix character sizes in a document it is not satisfactory to add the 137 margin codes to the Translate or equivalent entry for condensed print, rather than to the Preamble, because you could then get some rather unexpected positioning of text.

In the process of checking how far across the page condensed characters could be printed I was once more reminded of the unreliability of the Last

Line Recall function in some toolkits; there is little chance of a long SuperBasic line being recalled intact and frequently it will be so truncated as to be virtually useless. This is with version 2.12 of Toolkit II, which is a relatively recent and has a modified Last Line function.

If you have FlashBack, a simple way to avoid the aggravation is to type the SB line as a new record in FlashBack, then use the Transfer function to deposit it on the SB command line. You can then make any amount of modifications to the line without the need for re-typing all of it each time.

## Varistor

In case anyone has difficulty finding varistor suppressors for reducing mains surges, the order number from **Electromail** is 238-621 and the description is 'metal oxide varistors, 275V AC/61 Joules'. There are five in a pack and the price is about £4 per pack, plus £2 cover charge per order.

It is unusual to have a supplier asking if Trouble Shooter can help obtain goods from customers but there is good reason to believe suppliers are not the only 'bad guys'. In the case in question, the supplier had been unwise enough – that, unfortunately, is the way I think one has to consider it – to supply goods in advance of receiving payment. The result to date has been no payment, despite the customer acknowledging receiving the goods; several telephone calls and assurances that payment has been made have produced no money. Needless to say, any supplier who is treated that way is less likely to respond to urgent pleas for help in future if the customer had lost a file through corruption and needed a program to deal with it.

**Intraset** reports sending two copies of the program *Coursemaster* to **Ken Austin** in Australia. Both copies went to the address he gave originally but he has since moved, so a postal problem seems to be the reason for non-receipt in this case.

**INFORMATION:**  
Printer ribbons: CLP Ltd, Unit 7,  
Holland Way, Blandford, Dorset  
DT11 7TA  
Tel: 0258 459544.





# SUPER BASIC

The SuperBasic series on the expansive QL graphics capabilities continues under Mike Lloyd's expert tutelage.

**F**or all the cleverness of the QL graphics commands there has been constant criticism that the results are slow to appear on the screen, especially compared to the BBC micro and its supposedly inferior 8-bit CPU. Frustratingly, the abilities of the QL to handle graphics are more comprehensive than those of the BBC micro and many ways of accelerating them have been discovered.

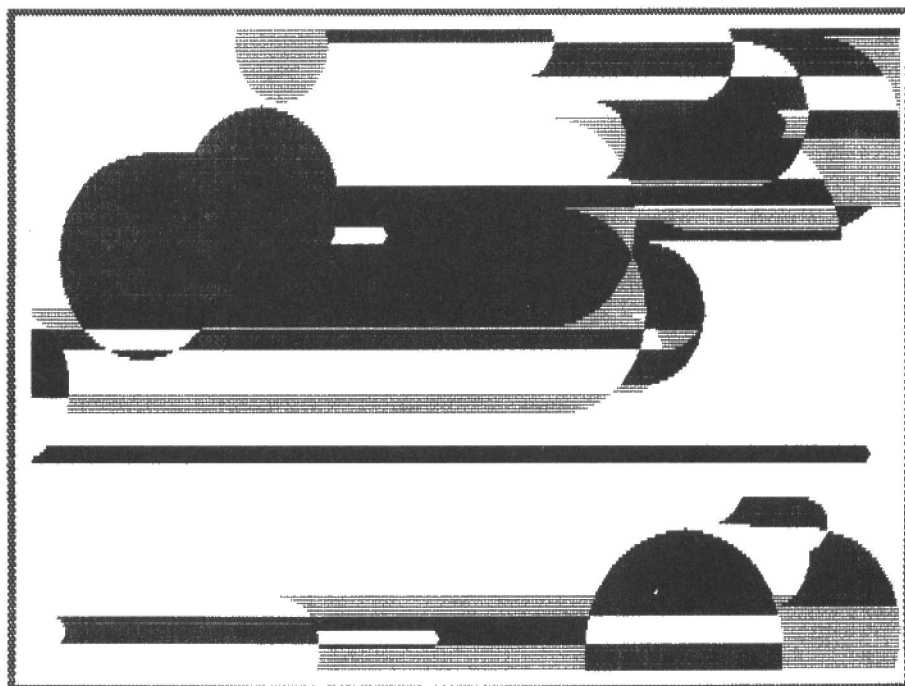
The simplest, and the subject of this article, is to write code which allows graphics as little as possible. That generally means avoiding procedure and function calls, keeping loops to obtain the maximum effect from the minimum amount of code.

Very slight acceleration of all programs can be observed when they are located in expanded memory, which runs faster than the standard QL RAM. Another possibility is to compile those programs which combine graphics with deeply-nested loops or difficult equations but even compiled SuperBasic still relies on the inefficient ROM-based routines for drawing lines and circles, so the speed increases are unlikely to be great.

Such marginal improvements pale into insignificance, however, when set against the advantages of the Digital Precision *Lightning* package which rewrites the QL ROM-based screen-handling routines to accelerate them to a much more acceptable speed. Even with *Lightning*, however, programmers will benefit from the "less is best" rule when writing their programs.

An appreciation of what the computer must go through to translate a graphics or printing command into a pattern of dots on the screen may help to explain the apparent difference between the performances of the 16-bit 8MHz Sinclair QL and the 8-bit 2.6MHz Acorn BBC micro.

Last month the difference between the graphics co-ordinate system and the pixel co-ordinate system was explained. In short, pixel co-ordinates relate directly to



what can be drawn on the screen physically whereas graphics co-ordinates are based on an imaginary, infinite and flexible grid. Any reference to a graphics location must therefore first be transformed into a pixel-based vector before it can be plotted.

The transformation takes into account the window size and position on the screen, the graphics scale currently in effect and the location of the graphics origin relative to the location of the bottom left corner of the window.

A further complication is that there are no "illegal" graphics co-ordinates, provided that they remain within the QL floating point arithmetic domain. If a point is outside the screen area it is not drawn. Contrast that with the instant complaints which occur whenever a pixel-orientated command – AT or BLOCK, for example – tries to exceed the window boundary on the QL or when any graphics command

on an 8-bit machine ventures beyond the screen boundary.

The complex mathematics required to support the co-ordinate systems and to convert between them are contained in a single, huge, unwieldy machine code routine. The magic of *Speedscreen* which accelerates only text, and *Lightning*, which improves text and graphics, is wrought by replacing this ROM-based colossus with a series of smaller, specially-adapted and optimised routines which do the same task at greater speed at the loss, it must be said, of some valuable RAM space.

With or without *Lightning*, programmers can take steps to get the quickest responses from the QL graphics. Because of the design of the QL screen map it is advantageous to locate the left-hand edge of windows on a pixel co-ordinate divisible by four. The default windows in TV and monitor modes all



# Listing 0

```

10 REMark Introductory Program
15 REPEAT demo
20  MODE 4: WINDOW 512,256,0,0: PAPER 0: CLS
25  Script 9, 5, "Graphics Demo": PAUSE
30  Graph 20: REMark 20 = first line of data
35  DATA 10, 180
40  DATA 50, 100, 150, 75, 30
45  DATA 23, 48, 30, 80, 72
50  PAUSE 200: AttGet 200, 100,
    "Press Any Key"
55  design1
60  design2
65  design3
70  design4
75 END REPEAT demo

```

Listing 0: the demonstration routine.

follow this rule. In the screen map the QL gathers pixels in groups of four and it is preferable that each group is either wholly within or wholly outside a window area, by which is meant the active area ignoring any border. It is less critical to place the right-hand margin of the window on the cusp between groups of related pixels.

Most programmers have discovered the attractive effect of "shadowing" a window by off-setting a black window to the left and just below it. Thoughtlessly many of them produce the shadow with a "CLS" command, which wastes time setting many thousands of pixels to black when only a relatively small portion of the window area will be seen. It is faster and neater to specify a wide, black border for the shadow window, such as:

```

100 WINDOW 100, 50, 84, 84
110 BORDER 4, 2, 0
120 WINDOW 100, 50, 80, 80
130 BORDER 2, 0: CLS

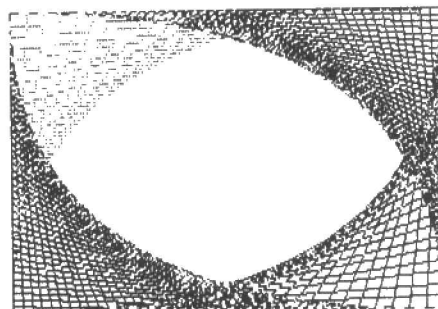
```

Undoubtedly the most dramatic improvements in speed are obtained by forsaking the graphics commands for those related directly to the pixel coordinate system when drawing vertical or horizontal lines. The BLOCK command is several times faster than the LINE command, with the slight disadvantage that BLOCKs cannot be anything but parallel to the window edges. Listing one shows how BLOCK can out-perform both the LINE and FILL commands in speeds and convenience in a very simple and short histogram program.

Even a histogram of fewer than 20 lines must be sufficiently flexible to cope with any positive value, to use a scale which shows the data to best advantage and to cater for any number of values. For the sake of brevity the display has been reduced to the minimum of a grid and data blocks. Readers are invited to add graph titles and axis values.

The window sizing in listing one is critical, a necessary result of using pixel-related commands. The OVER command

in line 116 ensures that the lower part of the grid remains visible when the data blocks have overdrawn it. The number of data columns and the highest vertical



value shown on the graph are obtained from DATA lines. A FOR...NEXT loop draws four horizontal grid lines as blocks, one pixel deep, which extend the entire width of the window.

Prior to starting the second FOR...NEXT loop, which produces both the vertical lines in a similar manner and the data blocks, the number of pixels between the grid lines is calculated. Data values which are so small or so large that they would crash the program are detected and treated prior to causing any damage. The user is still responsible for ensuring that the expected amount of data is present in the listing. The result of this program is an acceptable graph which is drawn in about one-tenth of the time a graphics-based equivalent would take.

Listing two could also be re-written to use pure graphics commands but it would probably become so bloated and slow that it would be worthless. The listing provides an attention-getter, an essential part of many programs and one on which most programmers do not wish to waste much time or code space. Programs often include a number of attention-getters which vary from the gently informative to the insistent; the one listed here tends towards positive rowdiness.

The part of the code to interest us is the use of the BORDER command in an active manner. The parameters passed to the procedure are the X and Y pixel coordinates of the innermost window and the text contained in it. A FOR...NEXT loop in a REPEAT loop draws ever-decreasing border boxes round the text to the accompaniment of a tuneful beeping. The code is simplified by relocating and resizing the window to avoid struggling with varying widths of border.

The OVER command is extremely useful when producing interesting abstract graphics with the minimum of code. OVER can be in one of three states - off, transparent and exclusive-or (XOR). The first two are relevant only to printed characters, while the latter, the one which

# Listing 1

```

100 DEFINE PROCEDURE Graph (DataSet)
104 LOCAL loop, x, y, box, colmax, maxhite
108 RESTORE DataSet
112 WINDOW 448, 200, 32, 16
116 PAPER 0: CLS: BORDER 1, 7: OVER -1
120 READ colmax, maxhite
124 FOR x = 50 TO 150 STEP 50
128  BLOCK 442, 1, 0, x, 7
132 END FOR x
136 colwide = INT(442 / colmax)
140 FOR x = 0 TO colmax - 1
144  BLOCK 1, 198, x * colwide, 0, 7
148  READ value: IF value <= 0: NEXT x
152  value = INT(value * 200 / maxhite)
156  IF value > 198: value = 198
160  BLOCK colwide, value - 2, x * colwide, 200
    -value, 4
164 END FOR x
168 OVER 0
172 END DEFINE Graph

```

Listing 1: a graph routine.



## Listing 2

```

200 DEFine PROCedure AttGet (x, y, Text$)
205 LOCAL loop, box, lentext
210 lentext = LEN (Text$) *12 +4
215 WINDOW lentext, 10, x, y: PAPER 0: CLS
220 CSIZE 2, 0: INK 4: PRINT Text$;
225 REPEAT loop
230   FOR box = 8 TO 1 STEP -1
235   WINDOW lentext +box *4, 12 +box *2,
      x -box *2, y -box
240   BORDER 2, 2, 7
245   IF INKEY$(3) <> "" THEN EXIT loop
250   BORDER 2, 0
255   BEEP 3000, box *10, 2, 10, 4000
260   END FOR box
265 END REPEAT loop
270 BORDER 0: CLS
275 END DEFine AttGet

```

Listing 2: the attention-getter.

interests us, affects both printing and drawing.

XOR refers to the way in which the colour of a pixel changes when it is overwritten. Normally a white pixel overdrawn in red shows red on the screen. When the OVER -1 command is given, however, the two colours are "mixed" electronically to produce a third colour, green. The explanation for this phenomenon is in the values which represent colours in SuperBasic and a process in binary arithmetic.

The values used to specify colours in SuperBasic are chosen carefully so that their binary values correspond to the colours used by an RGB monitor. All colours on a TV or monitor screen are made up of mixtures of red, green and blue, hence the initials RGB. Black is the absence of all three colours and its SuperBasic value is 0, or 000 in three colours shining on one spot and its value is 7, 111 in binary. The other colours take a value within those extremes, as is explained in the QL User Guide concepts section under the heading Colour.

In XOR mode the value of the background colour is modified by the value of the colour being printed over it by either a printing or a drawing command. The XOR rules are very simple - similar binary digits become zeros and dissimilar digits become ones. A few XOR sums will make this clear:

010 (Red)	
111 (White) XOR	
101 (Green)	
101 (Green)	
010 (Red)	
111 (White)	
101 (Green)	
101 (Green)	
000 (Black)	

locations slightly offset from each other. The XOR rules produce a kind of wire grid effect in Mode 4 and, with careful positioning of the characters, a somewhat less satisfactory "chrome finish" in Mode 8.

The remaining procedures produce large-scale graphics effects from very few lines of code. They are useful for brightening front faces for programs, or for drawing attention to advertising displays, or for demonstrating the general QL graphics abilities. For the purposes of this article they show the truth of the principle "the shorter the code the faster the program."

Listing four exploits a bug in the screen driver which cannot cope with FILLED and OVERed circles. The result is best viewed in Mode 8 and is reminiscent of 1960s flower power but no less pleasant for that.

Listing five again uses FILL to produce large expanses of colour and uses OVER to create a chaotic chequerboard of

## Listing 3

```

300 DEFine PROCedure Script (x, y, Text$)
305 LOCAL n
310 CSIZE 3, 1: INK 4: OVER -1
315 FOR n = -1 TO 1
320   CURSOR x *16 +n, y *20 +n: PRINT Text$
325 END FOR n
330 END DEFine Script

```

Listing 3: the 'wire grid' font generator.

The principle behind the phenomenon is important only if the resultant colour has to be predicted; if the intention is to produce patterns of random colours, OVER -1 is a valuable command to use.

All the remaining routines use OVER -1. The first, listing three, produces an attractive and very different effect from the standard QL text font. The text passed to the procedure is printed in three

colour in two quadrants of the screen. The overall effect can be likened to travelling through a futuristic tunnel and might have an application as the background to a game.

Listing six puts on to the screen the kind of designs normally seen constructed from thread wound between lines of nails. In Mode 4 the effect of the crossed lines is attractive, either as a static design or as a

## Listing 4

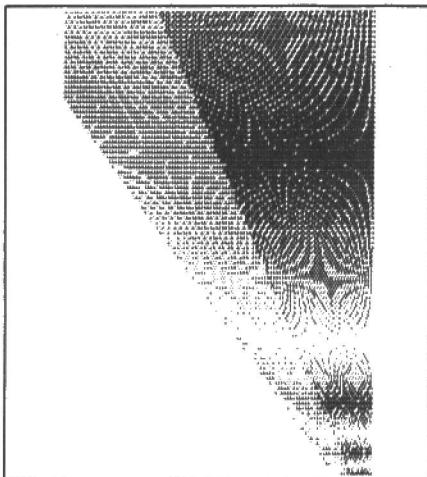
```

400 DEFine PROCedure design1
405 LOCAL loop
410 WINDOW 448, 200, 32, 16
415 SCALE 100, 0, 0: CLS: FILL 1: OVER -1
420 BORDER 2, 2, 7: BORDER 6
425 REPEAT loop
430   INK RND(7)
435   CIRCLE RND(180), RND(100), RND(20)
440   IF INKEY$(0) <> "": EXIT loop
445 END REPEAT loop
450 FILL 0: OVER 0
455 END DEFine design1

```

Listing 4: this exploits a bug in the screen driver.





#### Listing 5

```
500 DEFine PROCedure design2
505 LOCAL loop
510 WINDOW 448, 200, 32, 16
515 SCALE 100, 0, 0
520 CLS: FILL 1: OVER -1: BORDER 2, 4
525 REPeat loop
530   INK RND(7): LINE 90, 50
535   LINE TO RND(170), RND(20) +80 *RND(1)
540   IF INKEY$(0) <> "" THEN EXIT loop
545 END REPeat loop
550 FILL 0: OVER 0
555 END DEFine design2
```

Listing 5: this generates a 'tunnel grid'.

#### Listing 6

```
600 DEFine PROCedure design3
602 LOCAL loop, x, max, St
604 WINDOW 448, 200, 32, 16
606 CLS: BORDER 2, 2: INK 7: OVER -1
608 SCALE 120, -10, -10: max = 176: St = 4
610 REPeat loop
612   INK RND(255)
614   FOR x = 0 TO 100 STEP St
616     LINE 0,x TO x *max /100, 100
618     IF INKEY$(0) <> "" THEN EXIT loop
620   END FOR x
622   FOR x = 0 TO max STEP St
624     LINE x, 100 TO max, 100 -x *100 /max
626     IF INKEY$(0) <> "" THEN EXIT loop
628   END FOR x
630   FOR x = 100 TO 0 STEP -St
632     LINE max, x TO x *max /100, 0
634     IF INKEY$(0) <> "" THEN EXIT loop
636   END FOR x
638   FOR x = max TO 0 STEP -St
640     LINE x, 0 TO 0, 100 -x *100 /max
642     IF INKEY$(0) <> "" THEN EXIT loop
644   END FOR x
646 END REPeat loop
648 OVER 0
650 END DEFine
```

Listing 6: this generates a 'nail and thread' pattern.

#### Listing 7

```
700 DEFine PROCedure design4
705 LOCAL x, y, loop, St
710 WINDOW 448, 200, 32, 16
715 CLS: BORDER 2, 2: BORDER 6: OVER -1
720 SCALE 90, -74, 10: St = .5
725 REPeat loop
730   INK RND(255)
735   FOR x = 0 TO 90 STEP St
740     LINE 0, 0 TO x, 100
745     LINE 0, 0 TO -x, 100
750     IF INKEY$(0) <> "" THEN EXIT loop
755   END FOR x
760 END REPeat loop
765 OVER 0
770 END DEFine
```

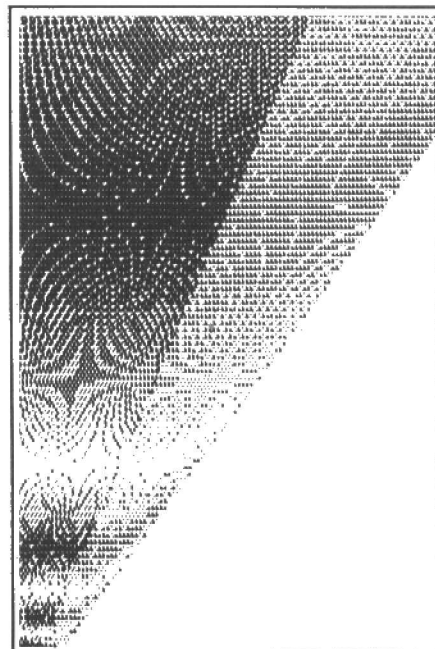
Listing 7: shows Moire patterns highlighted by XOR.

working display with subsequent re-drawings in random colour combinations.

Listing seven shows to the full a phenomenon which can also be seen in the previous procedure. When graphics lines are translated into pixel positions there are bound to be slight mismatches because of the roundings between the high-definition graphics values and the low-definition pixel grid values. Those imperfections are highlighted by the XOR function and show themselves as Moire patterns, named after a French mathematician. The step value (St) can be altered to change the amount of detail in the pattern and the speed with which it is drawn.

All the listings described are linked by listing 0—press a key to move from one to the next. If nothing appears on the screen at any stage it may be that the random INK colours selected by some of the designs have produced a black-on-black display. The answer is to move to the next display and hope for a better colour combination.

● Next month the graphics series moves into the more demanding territory of sines, cosines and tangents.





# SOFTWARE FILE

## STOCK ACCOUNTING SYSTEM

■ Tony Neilsen tries a new business utility from SD Microsystems.

**H**aving spent many hours writing business programs for the QL/Thor, it was a pleasure to be able to load and use a program written by someone else, especially as the program is being sold at £39.95 and is available on Microdrive or disc.

Accounting using computers has had a chequered history and it is probably true that there are no really satisfactory programs available on any computer at any price; some PC programs being sold in the £1,000 and higher price range leave a great deal to be desired.

The QL, although supplied with the Psion business suite, did not include any accounting programs. *Cash Trader* was an interesting small business approach but could not handle more than a certain volume of transactions. *Impact* supplied by Eidersoft in its early days provided a more sophisticated approach with some flexibility, as it was Archive-based, but did not cover the whole area by any means; if I remember correctly the invoicing procedures were ponderous.

The SD system is an integrated suite of programs covering invoicing, sales ledger and stock control. It is structured in such a way that one is always aware of which part of the system is being used and immediate warning is given if stock levels fall below the re-order level. Although considerable care is needed in using them, the programs perform as specified in the manual, a 20-page booklet printed on diabolical red paper. This idea arose when Digital Precision thought it is a good idea to prevent photo-copying the manual but even Freddy Vaccha has now abandoned it.

### Logical

Once one has rid oneself of the spots before the eyes, the manual is set out logically and is easy to follow but I would have thought that some knowledge of accounting would be required to avoid too many initial errors. I found one or two traps which gave erroneous results. VAT is handled well so far as rates of tax and calculations are concerned and according to SD Microsystems it is "based on a close study of the Customs and Excise guide and the VAT man should be pleased to view the information in this form".

Perhaps, before looking at the program in some detail, I may get a few complaints off my chest. It is not too difficult to change 'mdv' to 'flp' within programs so that the disc version, the one I was using, avoided the `flp__use mdv` command.

There may be a reason I have not spotted but why do we not have a standard built-in file for the customer names and addresses? On altering and then saving customer data, one is asked for the file name; later one has to re-load the file. I should have thought that could be automatic – it is with the product file. On being asked to confirm a wish to save (Y/N), the enter key has to be pressed as well as the y or n key.

While an Epson-type printer is most likely to be used, there are a number of daisywheel printers in use and most of them have a built-in line feed; there is no provision for configuring the printer to take out the line feed, so daisywheels double-space.

### Altered

When paying an invoice, if an amount greater than that of the invoice is entered – perhaps because something else is being paid – the whole invoice total is altered to that of the payment, which alters the sales totals, analyses, statements. On the other hand, extra payments can be entered as a different transaction. Equally, it is not convenient, on entering a part payment, to have to re-enter the balance as a new transaction.

The sales analysis deals with the full invoice totals and not with the sales VAT. It is the sales less VAT which interests the businessman and the auditors. Equally, there is no provision for 'adding on VAT' if one prefers to enter the amount nett into the sales ledger.

The Customer Statement, while accurate and usable, shows a 'C' if the item has been paid and a 'D' if it has not. Although the total owing is correct, it may confuse the customer – and customers are confused very easily when paying the statement with overdraft interest something above 15 percent base rates.

The stock is updated during the invoicing activity and, provided new stock is entered first, the stock balances can be listed. There is no provision for listing the

transactions on a stock item as a separate printout, so in the event of the actual stock not agreeing with that shown by the computer. The simplest way of keeping track of stock movement is to file extra copies of the invoices. This is most important, as stock shortages can be delivery of the incorrect item, errors on the computer input or, of course, theft and/or pilferage.

The programs are all menu-driven with clear headings, thus enabling a quick choice and loading of the part required for entry. The main start-up menu is:

- 1 – SALES LEDGER
- 2 – STOCK INVOICING
- 3 – STATEMENTS
- 4 – STOCK CONTROL
- 5 – UTILITIES
- 0 – into BASIC

Each of those 'programs' gives rise to another menu; many of those choices give rise to a small sub-menu. Some idea of the extent of the choices may be given from the SALES LEDGER option:

- A = Add transactions
- C = Customer Statement
- F = Financial totals
- L = List Journal
- M = Microdrive operations (covers floppies where appropriate)
- N = New Period
- O = Open new accounts
- R = Receivable accounts
- V = VAT Summary
- Q = Quit program (this returns you to the main menu)
- Y = Analysis

Up to 199 accounts can be maintained; 01-99: 00 is retained for cash sales so that they can be included in the sales analyses and VAT summaries.

When entering transactions, the `ENTER` key will auto-repeat the last entered date but VAT is restricted to three groups – 0 for zero-rated goods, 1 for standard rated and 2 for exempt. There is as yet no facility for another rate if the dreaded EEC multiple rates occur. The VAT is "switched off" by selecting code 2; these programs could be of real use to small, part-time businesses not wishing to register for VAT. If you have more than



one analysis code on an invoice, multi-entries would be necessary to keep the analysis meaningful.

The 'open item' method of sales ledger is used, so it is important to know which invoices are being paid when entering the cash. Where there is a part payment the whole invoice is discharged and a new item covering the balance must then be entered. The latest version of the program

## Naming

allows an 'auto' selection of invoices once the customer number is selected; the various outstanding invoices are presented with a 'Y/N/Q' prompt so that the invoice number being paid is not necessary to locate it.

I found opening new customer accounts confusing, as the name is restricted to 10 characters and a number is then allocated – a short name and the addresses appear to be entered under the STATEMENTS program. With practice, the procedures should be quick and effective. I was unable to alter the name of an account which I tried as customers come and go and, with a limit of 99 accounts – 199 on expanded QLs – one may well wish to change an old to a new.

The stock invoicing 'program' is very good; not only did it produce a very professional-looking invoice with all the required data but it is necessary to key-in

only the quantity, product code and trade discount code, if any, to produce the invoice line. VAT was added correctly and, of course, where the invoice is being generated, there is no need to enter it on the sales ledger as well; that is done automatically as, of course, is the updating of the product stock. Only the lack of a 'tax point' facility mars a very good effort in this field; a different tax point from the date of the invoice is most unlikely in any case.

The product file can be edited in all the obvious ways – change of description, price; there are facilities for viewing or printing the price list with similar facilities for the discount rates. It is even possible to increase prices by a percentage which may be applied to all prices or on a selective basis, when each price is brought to the screen individually followed by a (Y/N/Q) prompt.

The STOCK CONTROL facilities are wide and useful. One can list re-order items where stock has fallen below a specified minimum stock level – a full or partial stock list and, via a single-letter stock code, items may be sorted prior to printing. This latest version has a 'location' facility to indicate where, in the warehouse, the stock is located. This three-character field would enable random stock storage, which would be invaluable when it is necessary to use all the space available in a warehouse. Logical

storage does result in empty positions reserved for stock which has not yet arrived or has already been sold.

The UTILITIES section permits the use of a network to enable a sharing of the stock file(s). I am doubtful about this facility being used in the small business area for which it is intended but it could, in some circumstances, be very helpful.

There is no doubt that SD Microsystems should be congratulated on producing a program which works and, within its limitations, work very well. It is suitable only for a small business and one which deals in a restricted stock range but it is that for which it is intended. There are no provisions for purchase or nominal transactions, so they must still be dealt with manually.

At the price this program is by no means out of the question for anyone who has possibly a very basic knowledge of book-keeping and accounting and would like some experience of how the sales and stock aspects of a business can be covered using a computer. Programs such as this are always being updated and no doubt we shall see later versions with additional facilities. I hope so.

**Program:** Stock Accounting System  
**Supplier:** S.D. Microsystems, P.O.  
Box 24, Hitchin, Herts SG4 0AE  
**Price:** £39.95.

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# MAKING THE QL MEAN BUSINESS



**I**t is amazing what you can do with an old printer and an "obsolete" computer, says David Drysdale.

**T**he first thing I did after receiving a redundancy cheque after 29 years with the same company was to spend some of it on upgrading my QL. It was no extravagance. The local job centre had made it clear that a middle-aged, hot-metal printer whose job had been computerised out of existence had nothing to offer today's job market. "Don't even bother to call us again", they told me firmly.

So that was it. Becoming self-employed seemed the only option and I began to take stock of my resources. There was the redundancy lump sum which could tide me over for some time and I also had a car, a telephone, my QL computer and a 35mm. camera. Photography had been my hobby for years and as I had also sold one or two articles to magazines I decided that becoming a freelance photo-journalist would be one way to survive.

The QL and Quill had already shown me how useful a word processor can be to

a writer. Often, using my conventional typewriter, I would extract sheet after sheet of paper before I felt a satisfactory start had been made. Some writers make as many as 15 false starts before their story gets under way and it is here that Quill comes into its own. I even found it could save time to complete a story on Quill and type it out, from the screen, using my old typewriter. It was not a professional approach, however, and I decided a printer must be the first item to buy.

The machine chosen was the Brother EP44 printer/typewriter with its in-built serial interface and the memory capacity to store a page or so of text. Why that machine? First, because it was a portable battery-operated typewriter in its own right and I reasoned that it would always hold its resale value better than an ordinary computer printer which could date rapidly.

Again, having an electronic portable typewriter meant that I could take it with me to the library when doing research, type in my notes silently and download them into the QL for editing on my return.

One snag with the EP44 is its thermal printhead which can use only smooth paper, which is costly. The thermal typewriter ribbons are costly, too. The print-out quality is excellent, though, and it produces first-class typescripts.

Three other major upgrades were needed – a memory expansion, a reasonable monitor and, most important of all, a disc drive unit. I sent away the computer

to have its memory expanded to 640K and at the same time ordered a Microvitec 653 Cub colour monitor and a Cumana twin disc drive system.

Without a disc drive the QL is, in my opinion, a complete non-starter as a business tool – an opinion formed after hours of picking up the pieces whenever the dreaded "Bad or changed medium" flag appeared. I blamed the Microdrives for it and also for the continual crashes which occurred. Since the upgrading the bad medium flags seldom appear and the number of crashes has fallen.

Although the number of crashes was fewer after the upgrade a few still happened and so I bought an RME Power Block spike-reducing unit to smooth the power supply. It helped a little but I began to suspect the in-built memory expansion. I negotiated a part-exchange for its replacement by a plug-in 512K Expanderam by Miracle Systems Ltd and the problem was solved.

I also bought an ICE front-end system from Eidersoft complete with mouse and that helps tremendously. I know there are snags with this system and that the on-screen calculator is a joke but I find the whole thing to be a great time-saver.

The Icon front-end is such a boon because I am hopeless with anything technical about computers. I skip over all the articles in *QL World* about toolkits and The Progs as I know nothing about writing programs. A small exception, perhaps, is developing procedures in



Archive. "Sitting next to Nellie", I find, is the simplest way to learn about the QL. When I bought my printer I ignored all the technical talk from the salesman and walked back into the shop the next day with my computer under my arm and asked him to link it to the EP44 and print me an A4 page. He did. It took him the best part of three hours to get it running. I am certain it was the most difficult sale he had ever made but it saved me hours of frustration.

Not being able to program means that I have to rely entirely on commercial products but this is not bad thing. The packages provided with the QL meet 90 percent of my needs and many programs which must have taken months to develop can be bought for as little as £20.

An example is *Investment Monitor* from Michael Slatford Software. It was a program developed by its author to keep track of his savings and was developed further to include unit trusts, shares, insurance bonds and so on. As well as keeping a record of investments and calculating their value, the program flashes a warning when a share price falls to the point at which the investor has decided to sell.

Like many other QL users who have received redundancy or retirement cheques I have to look a little further ahead than today's building society interest rates and have found this program to be a boon. It is particularly user-friendly and requires little knowledge of the stock market.

Another inexpensive program I bought to help get the business started was the *Small Trader's Pack* from SD Microsystems. As its name implies, it consists of a suite of business programs including sales ledger, purchase ledger, stock control system and mailing list. It also has a label designer, a telephone directory and a program to enable the computer monitor to be used as a billboard display.

The program suite was installed on two Microdrive cartridges and I had no difficulty transferring them to disc. Then came the snag. Because it was designed to run from Microdrives on an unexpanded QL it could not take advantage of my upgrades and the program kept instructing me to remove disc A and replace it with disc B and then go back to A again.

The program was also too sophisticated for my simple needs. I did not have much use for billboards, stock control or mailing lists. What I needed was a user-friendly bank account-type of program and, to its credit, the same company provided one named *QL Bank Account*.

Since then my business has developed into other directions and I shall probably need *Small Trader's Pack* again soon. SD Microsystems has now upgraded the program and I have returned my cartridges for the new disc version. I hope I shall then have no further trouble.

The Psion program package designed for the QL is still the one I use most. It is a rare thing for a day to pass without a Quill document appearing on my monitor

screen and, despite all the criticisms, I still find this word processor very useful. It has disadvantages, of course. The cursor has the irritating habit of flying back when I do not want it to do so and refusing to budge when I do. I also find, when making corrections and alterations, that odd letters and repeated words occur all over the place. They all clear away if I press F2 to refresh the screen but they are a constant irritation.

I tried to improve things by sending to Digital Precision for its all-embracing word processor *Special Editor* but I just cannot understand how it works. That is probably because I have been using Quill for so long that I cannot break away from its concepts. I wrote to Digital Precision about the problems and it offered me a free lesson on the program if I cared to visit its office. I will probably accept the offer soon, as it is a pity to see such a valuable resource gathering dust.

Meanwhile I have installed a copy of the DP *Lighting* program to my Psion packages. It does nothing to correct the Quill faults but makes the program work more briskly.

## Nellie

After Quill, Archive is the program I use most. Learning Archive has not been easy. It has taken hundreds of hours of trial and error to get a working grasp of it. Even now I find that some simple procedures like getting the program to skip a null field when printing-out labels are difficult to understand. My way round these problems is to visit Quanta workshops where I can use my favourite "Sitting next to Nellie" approach.

I find, however, that the Archive ability to operate multiple files combined with the ICE multi-tasking system can turn the QL into a powerful little workhorse.

My usual approach is to load four programs with the ICE multi-tasking facility - Archive, two Quills and a telephone call-timing and cost-checking program from Quanta. Archive is then loaded with my Writing program which contains several multiple files. The first is a "card index" with details of all articles and pictures I have sent. Next is a list of markets and magazines for freelance work and the other two files are indices for photographs and newspaper cuttings.

One of the two Quill programs on the ICE multi-tasker is used for article writing while the other is left free for letter writing. The call timer, an interesting program which takes the time of day and distance into account when calculating the call cost, is usually set at the beginning of long-distance calls.

With all the time and money invested in my QL system it is natural to feel concern about the future of the computer. There are enough commercial programs on the market to meet my future needs, so my concern is about the hardware. With that in mind I bought a cut-price back-up QL in

a clearance sale and immediately saw the benefit of having a plug-in memory expansion over an in-built one. If the main computer malfunctions the expansion can be fitted to the spare and the full workload carried-out.

The spare QL was stowed away unused for a time but recently it has been pressed into service. It now handles all the cash side of my enterprise, leaving the main machine to handle production. The spare is limited to Microdrives, of course, but as the financial programs need little data storage there are no problems, particularly as the back-ups are made on disc by the main computer. The spare is also linked to a Tandata modem and is on-line to Prestel.

The Prestel services are not very relevant to my business although Telex link, which enables a subscriber to access my Telex machine, has been useful occasionally. The ability to get printouts of rail and coach timetables is also useful but my main use of the modem is for instant on-line access to my account with the Bank of Scotland in Edinburgh.

This home and office banking service known as HOBS allows most spare cash to be kept in a high-interest deposit account instead of the no-interest current account. Money can be transferred between accounts instantly, by day or night, from the QL keyboard. This is useful when emergency money is needed and I can move some immediately from the deposit to the current account and collect it without delay from the local cash dispenser, even outside banking hours.

Getting my Tandata modem to work efficiently has not been easy. It seemed to pulse out the number it was auto-dialling just a fraction of a second before it 'seized' the line and needed several attempts to make contact. I contacted Tandata about the failures and it replaced the three units which comprise the modem system. Things were better for a time but never really satisfactory. The communications program I was using was *Rawcom/Qnet* as the Tandata *Q-Connect* communications package had its printer baud rate fixed at 9,600, which was not compatible with the EP44.

The solution occurred entirely by accident. About a year previously I had sent for an upgrade for my *Rawcom/Qnet* program but it seemed so little different from the original that I did not bother to install it. As the modem was not being fixed to the spare QL the program had to be on Microdrive, not disc, and the new version was the one I picked up for transfer. The problem was cured completely and it is rare now for the modem not to make contact first time.

My two computers stay switched on permanently. They are loaded with programs and tirelessly await my bidding at whatever time of day or night I choose to work. The most hard-hearted boss could not ask more from his workforce than that.



# SOFTWARE FILE

**W**ith only hours to go before the vital deadline, Jim Spencer hit the "Save" key and sank in his chair, exhausted. The results of three weeks' research, five stormy interviews and 12 hours of typing flashed from his computer's RAM on to a floppy disc. There was just sufficient time to snatch a few hours' sleep before he and his report were to be presented to the managing director.

On the far side of the city the thunderstorm reared like a mountain face. The first lightning bolt hit an electricity pylon, its angry power dissipating into ripples of flickering light in a thousand homes. Its final echo was an electrical spike, its final victim the Sinclair QL on Spencer's desk. The screen froze but the disc drive light stayed defiantly on, the disc spinning wildly past the read/write heads.

Spencer forced the disc from the machine. Somewhere in its battered and garbled memory were the remnants of his report. Somehow he had to resurrect it before sunrise.

For a long time a number of programs designed to recover lost files have been available for the QL. Quietly gaining a reputation and cornering its share of the market, apparently without a published review of its performance, the PDQL *Lazarus*, Version 2, has been bringing files back from the dead for more than three years.

Written by Chas Dillon, *Lazarus* works only with discs and only with discs accessed via an interface containing the appropriate physical I/O facilities. The program is nevertheless compatible with the majority of disc interfaces used by QL owners. It has been designed to work with the least need for specialist knowledge on the part of the user and therefore perhaps lacks the flexibility and sophistication of, say, the Digital Precision *Super Media Manager*. It is, however, so straightforward and so reliable to use that it has

## LAZARUS

been my first choice of rescue vehicle ever since the review copy arrived in the office.

The program is a Turbo-charged SuperBasic program compiled into an object file of less than 25KB. It runs concurrently with SuperBasic so that many of the normal file management operations can be accessed by pressing CTRL-C to return to the SuperBasic command line. My copy worked satisfactorily with Super Toolkit II in place but it seemed to object to the presence of QRAM for some reason. That is not a particular disadvantage because disc doctors like *Lazarus* are best used outside a multi-tasking environment.

The program begins by asking a few questions about your system — the location of the suspect disc, the storage density, printer name and the like.

The first sector on any disc is the start of the mapping file, which *Lazarus* assumes to be corrupt. The simplest commands are to move to the next or previous sector, achieved by pressing F1 or F2. The central display area shows the contents of the sector in ASCII format, although a hexadecimal display can be selected. Pressing F1 a few times will move the program into the directory area and recognisable filenames should appear.

Blundering about a disc sector by sector is rather like crawling round Hampton Court maze blindfolded. *Lazarus* allows you to enter a filename for which to search and then hunts through the disc at high speed until it finds a sector belonging to that file. If you cannot remember the full filename it can look for a fragment of the name or, if you are desperate, a text string likely to be in one of the file sectors.

High speed, of course, is a relative term. It takes a few

**Mike Lloyd  
raises his lost  
programs  
from the dead.**

minutes to work from one end of the disc to the other in search of a tiny and recently-written file. The program "P" option can help by re-positioning the sector pointer, allowing you to start the search from any point on the medium.

If you are lucky eventually you will find the first sector of the target file. *Lazarus* allows you to obtain a hard copy print of the screen display or to begin a "collector file" on another medium. The most convenient medium is likely to be a RAM disc but a wide choice of options are catered for. The collector file will eventually hold, you hope, the entire contents of the file you are trying to recover. It can be tidied with *Editor* or even imported into *Quill* and for the effort of an hour or so you will have rescued many hours' worth of valuable data.

Having printed or saved the first sector, *Lazarus* makes an intelligent guess about the location of the next part of the file. It can be done automatically with the "Mirror" option or under your control by moving sector by sector. Unfortunately, if your disc is frequently over-written and fairly full, the orderly allocation of disc sectors is likely to have broken down. To account for the rotation of the disc past the read/write heads between write operations it is normal to attempt to write to every third sector. If the target sector is already allocated to another file the next free sector beyond it must be used. The more frequently a disc is written to the less likely it is to remain orderly.

Because of its intelligent defaults, *Lazarus* will locate all the components of a file on a "tidy" disc with little difficulty but on untidy media it strays quickly from the desired track. For such occasions an ASCII printout of the first and last 64 characters of each sector, with identifying references, can be obtained by pressing the "S" — for "summary" — key. Match the sectors, access them in order and save them to the collector file.

You will have guessed that *Lazarus* is best at recovering text files, be they program source files, *Quill* documents or sets of data. There are not many people who could confidently sew together a compiled program from its constituent file blocks.

Corruption need not strike at the mapping sector, of course, and *Lazarus* contains some useful utilities for the rapid recovery of files blighted by a damaged block. The least demanding is *Transfer*, which copies uncorrupt sectors to another disc and replaces damaged areas with zeros. A block transfer command can then be used to salvage suitable blocks from the damaged disc to fill in the blanks.

If data is precious to you, if you have been known to forget to make back-ups, if occasionally you are unlucky and if you are not too technically-minded, *Lazarus* is an essential addition to your software library. Think of it as an insurance policy against the day when an electrical spike arrives at the wrong moment or foolishly you switch discs with files still open. *Lazarus* is well worth its price even if you have no immediate need for it. Can you afford not to have it, or something like it, to hand?

### INFORMATION:

**Product:** *Lazarus*

**Price:** £20

**Supplier:** PDQL, Unit 1,  
Heaton House, Camden  
Street, Birmingham B1  
3BZ.



# SOFTWARE FILE

## RECOVER 1-1

### INFORMATION:

Program: Recover 1.1

Price: £20

Supplier: PDQL, Unit One,  
Heaton House, Camden  
Street, Birmingham B1  
3BZ.

Tel: 021 200 2313

**A**rchive is like Quill in that it will not lie down and die, despite its well-publicised failings. Unlike Quill, however, it has not suffered much competition. The most obvious competitor is *Flashback* but that program lacks an in-built programming language. While it is a far better program in various ways, it cannot be tailored to do the kind of specific, perhaps complicated, jobs Archive can handle. So, like Quill, there looks to be a use for Archive for the definite future. That being so, it is worthwhile looking at the PDQL list of programs which ease life with Archive.

Loss of a database file must surely be top of the list of fears for users who do important work with Archive; the program is not alone in being most unhelpful to anyone who forgets to CLOSE a database which has been modified before switching off. That is one way of producing file corruption and there are various others, such as switching off the system with disc or cartridge in the drive, or having a lock-up or crash occur while a file is OPEN – perhaps even with it CLOSED.

*Recover* takes corrupted files, however generated, and produces sensible listings of the fields and records contained in them, ready for loading into Archive again; there is no such thing as a 100 percent assurance that any file can be made completely correct once more but this program does

### Bryan Davies looks at an Archive-saver update.

what it can without fuss and gives the user the chance to make amendments where necessary. The main thing is that you get a file which can, at the very least, be loaded into Archive and OPEN-ed again.

One snag was obvious from the start of the review; I had no corrupted files. It was necessary to engineer some corruption to test the capabilities of *Recover*. That took several attempts to produce corruption in the \_DBF files without simultaneously corrupting the disc directory and making the disc unusable – and in need of attention from another Chas Dillion work, *Media Manager Special Edition*. An easier way of rendering \_DBF files unusable by Archive is to read them into *The Editor* and alter/delete the file header – the “vrmidbfo” portion – and this method was also used during the review.

This is not an easy subject with which to deal, as neither written nor file instructions were provided with the review copy. Presumably, some form of instruction normally supplied to purchasers. Fortunately, the program is fairly straightforward to use, although it was not at first obvious to what some of the single-letter choices offered referred. Given a choice of (m/f/k/r/w) when selecting the input device, the “m” and “f”, and perhaps the “r”, might be obvious to most users but what are the others?

The use of single letters for choice suits me but the virtue of it is partially lost if you have to press ENTER after some, but not all of them. It would be more helpful to some users to have, say, three-letter – e.g., FLP or RAM – choices dis-

played, with the first letter highlighted to indicate that it should be pressed to select.

Many PDQL programs are strictly utilities and do not incorporate frills. The information on the screen tends to be very brief and can be less than helpful to users who are uncertain what they are doing but this is reflected in the relatively low prices charged.

The program loads from a Boot file, which calls a set of command extensions named Xtras. This is a familiar name to users of *The Editor*; if you already have one of the Digital Precision programs loaded it may be unnecessary to load the extensions. The *Recover* \_bin file is EXEC-ed, so can be multi-tasked with other jobs. It takes about 70KB of memory, excluding about 6KB for the Xtras.

On-screen prompts take you through a brief series of questions on devices and file names. All the obvious devices are catered for, including hard disc – the “w” choice mentioned earlier is Winchester. Accepting all the defaults results in all the recovered records being displayed, which makes the recovery process slow; if the corruption is thought to be limited and the relevant information such as field names, maximum string length and maximum record size are known, it is fairly safe to let the program get on without writing anything to the screen other than the number of characters so far read.

For the unsure user it is safe to press ENTER in answer to all prompts but, for some reason, that answer is unacceptable when you are asked if the displayed field names are correct and you

have to give a “y” or “n”. Otherwise the only default which was unsuitable for my test files was the 51 characters used as maximum for a text string. In an effort to keep down file size, I had made field contents relatively large and had typed-in data with commas but without spaces between different sections.

When you have chosen to display every record as it is recovered it is possible you will not want to go all the way through the recovery process at once. You are asked, for every record, to say whether or not the data as presented for the first field is acceptable or not. If you say no you are given the chance to move backwards or forwards through the records and re-start with a cursor placed on the character you specify as the start of the field or to quit.

You can also toggle between full display of the record and showing just the first field. A really big file may take hours for recovery to be completed; at intervals during the early part of the recovery you are asked whether or not you wish “to terminate the run.” A “restart position” is given if you do, so that you can continue the task at some later time – the “quit” option allows this also. You can recover the file at your convenience, section by section, and piece it together in an editor program before Importing it into Archive.

When the number of recovered characters equals the figure suggested initially by the program as the likely total size of the file you are asked to choose whether or not to look any further. As is normal with Psion files, the tail end of a \_DBF file can contain garbage, such as deleted text, and this is not needed in the recovered file.



A file which started at 114KB was reduced to 102KB after recovery; you may achieve the same saving by using the Archive Backup command. If in doubt, the recovery process can be continued, with the data being displayed on the screen; it is soon obvious whether or not there is any point in continuing. Any "records" added to the end of the file in this way can be deleted once the file has been loaded back into Archive or in The Editor.

The recovered file is straight text, not a \_DBF file; it does not contain the various identifiers by which Archive recognises a file as "its own". The file starts with the field names, in double quotation marks and separated by commas – e.g., "A\$", "B\$" – and the records follow in the same format. You can load it into Archive – or Archdev – by using the Import command.

Two files were used for test purposes; one had 267 records and was 25KB long, the other had 1,427 records and was 114KB long. Recovery of both was completed without problem, only a few

minutes being required for the shorter one but more than half-an-hour for the other. So far as could be seen without checking every record the \_DBF file obtained by importing the shorter of the recovered files was all correct but a large section of records in the recovered version of the larger file was garbled.

The reason for the latter appeared to be linked to the presence in the original, uncorrupted database of parts of two records in places where they should not have been. This was not evident when using the file but was clear when The Editor was used to look at it. The unwanted record portions put the automatic recovery process out of step; this was avoided during manual operation by rejecting those sections. Even with the bad records the recovered file still loaded into Archive and could have been corrected.

Regarding possible snags, there is nothing serious to report. Until the choices are learned, there may be some tendency to make an incorrect selection and the program

does not give you a second chance; I like the approach which is becoming standard for PCs, of allowing the ESC key to be used to return to the previous menu and make another selection. As it is, if you go wrong you have to keep pressing ENTER until the program quits, then restart. Alternatively, you may choose to continue with the "manual" recovery process, with every record being displayed on the screen; it would be helpful to be offered the option to change back to "auto" mode when you have examined a few records and found them to be coming out satisfactorily.

During multi-tasking operation, taking the "quit" or "terminate" options resulted in the message giving the "restart position" – in case file recovery is to be completed later – flashing on and off the screen so quickly that the figure could not be read. When the figure entered for maximum string length is too low the first record which comes along with a longer string puts all succeeding records "out of synchronism" and the remainder of the

recovered file is likely to be useless.

You can prevent this in manual mode by rejecting the record with the over-long text. It should be no difficult task to write down the details of such a record from the screen and insert it once the file has been read back into Archive. Perhaps it is asking too much for the program to allow the user to ask it to accept – and write correctly – a record which does not meet the specified format.

Bells and whistles this program does not have. It just does the job. It may not appeal to the home user who buys programs partly, or wholly, out of curiosity, rather than from commercial necessity. For the business user it could be invaluable. With a normal-size database file the time from crash to being back in business could be less than an hour, a fair saving over the many hours it would take to reconstruct the file – supposing the data is still available to do that. Even if you value your time at a low rate, recovery of only one file should be sufficient to cover the cost of the program.

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# SOFTWARE FILE

## INFORMATION:

**Program:** Database Analyser  
**Price:** £10  
**Supplier:** PDQL, Unit One, Heaton House, Camden Street, Birmingham B1 3BZ  
**Tel:** 021 200 2313

# DATABASE ANALYSER

It is fairly simple to create an Archive database, without really giving much thought to layout or possible long-term development needs. As the database grows, any desire to change its form begins to disappear, because making changes with Archive is not a task infrequent users will fancy. An operation which should be simple – e.g., adding one field to an existing database file – can be complicated enough to make some users abandon the task after two attempts.

When a database is intended for use over a lengthy period and may grow steadily with time it would be useful to be able to analyse the use being made of the fields in it, on a regular basis. Perhaps one field is almost never used and could be removed, or the space allocated for another could be more than is needed for even the longest field of data.

Database Analyser allows the user to have databases checked for such things as maximum and average field length and frequency of usage – see illustration.

This program is a collection of procedures written in the Archive language. Once Arc-

Bryan Davies inspects a program which helps to keep growing Archive databases in order. Database Analyser is slow – but nothing like so slow as redesigning a well-developed database from scratch.

hive – or Archdev – is loaded, typing <RUN "Archanal"> starts the analysis process running. The on-screen prompts are all that is needed to use the program but, in this case, instructions were provided with the review copy, in the form of Quill.DOC file on the disc. The analysis procedures are just like any others and you can use ESC to get back to the Archive command line if necessary – to make a Backup of the file being checked, for instance. Typing <START> sets the program running again.

## Not speedy

It is explained in the instructions that the analysis is by no means speedy and that this is a function of the constraints of

the Archive programming language. It took about 15 minutes for the 25KB file with two fields and 267 records to be analysed; the 114KB file with 1,427 records and five fields took about one and a half hours.

## Report

The process can be terminated at any time by pressing ESC. The total number of records in the file and the current one being processed are shown on the screen. A report is produced – as illustrated – when analysis has been completed or when a run has been terminated. The choice is given of having the report written to the screen or to a printer; you are not limited

to one look at the report, as it can be sent to either device as often as required. The printout routine has a characteristic which can be infuriating – it up-spaces a whole page before printing a few lines.

## Sensible

An analysis would not be fully sensible if it did not take note of fields which have no contents and the program counts the fields which are "non-null" – i.e., they have some character other than Spaces if string fields or are not zero if numeric fields. The maximum length of each field is shown, followed by the average length of non-null field entries. A rough average record size figure is given, allowing the user to calculate how many records should fit on to one cartridge or disc, when allowance has been made for the various tables set up by Archive.

The Database Analyser is simple, easy to use and cheap. There is nothing magic in it but it could point the user in the direction of greater effectiveness and efficiency in the construction of databases. A printout produced by this program provides information which is needed in the event that Recover has to be used – field names and maximum string length.

Because of the time spent customising Archive to do specific jobs the user is likely to get "locked into" it, particularly since there is little alternative to it on the QL; PDQL offers a good set of tools for keeping Archive operations in order and the prices are low enough for almost any budget.

### Database analysis of field usage — database g\_.dbf

Number of fields: 5

Record on file: 1,427

Records examined: 1,427

Field name	Used	Field name	Used	Field name	Used	Field name	Used	
A\$	1,427	B\$	1,424	C\$	325	D\$	114	
E\$	37							
Field name	Max sz	Avg sz	Field name	Max sz	Avg sz	Field name	Max sz	Avg sz
A\$	59	10	B\$	79		C\$	79	35
D\$	78	39	E\$	64	40			41

Average record size: 64 characters.



# SOFTWARE FILE

## THE FUGITIVE

**Program:** The Fugitive: A Text Adventure  
**Supplier:** Di-Ren,  
 43 Davids Road, Forest Hill, London SE23 3EP.  
 Tel: 01-654 8329.  
**Price:** £9.35 mdv or disc.

John Shaw starts this text adventure with dire warnings but finds that life on the run can be fun.



**T**his text adventure arrived promptly after I had ordered it by telephone — 10 out of 10 for promptness, Di-Ren. Within two weeks an update disc, eliminating some bugs arrived — 10 out of 10 for customer relations. Barely a week passed before another update disc arrived, correcting still more faults in the adventure — 0 out of 10 for testing prior to distribution.

I confess that after that series of surprises I was of two minds whether or not to continue the adventure; would yet another update arrive eroding my confidence in the many hard hours which no doubt lay ahead playing the game? Fortunately, none arrived and I found myself deeply involved in a novel although not altogether standard adventure.

The scenario to this program is that you are working for a British Embassy in the Soviet Union. After several years a problem arises. It becomes essential that you leave as quickly as possible. You are *The Fugitive*. The aim is to escape to the British Embassy in Poland. It must be achieved in the shortest possible time.

There is a neat four-page book giving instructions on how to make a copy and, in addition, giving details of some of the 'keywords' which should help you on your way. On the back cover is a map of the scenario showing you how extensive and complex the area is. A demonstration

location is also provided on the disc so that, presumably, you can practise the game.

You are warned further that you have some 140 locations to visit and that the whole thing has been designed to be a complex adventure which will require plenty of patience and thought. The author tells us that it has not been designed to be gimmicky or easy. Most situations in the game have logical if obscure solutions. Do not despair if you do not appear to be making any headway, he adds.

With that dire warning in mind I started the game.

Once the program has booted we see a good

The adventure starts in the lounge of your apartment. You are told that there is a sideboard with drinks on it and you can see a 'Telephone'.

By conventional game standards the aforementioned items should be all that there are in the room, but try looking under the sideboard. You find something not previously mentioned; try again — there is more, once again, and still more, none of which has been mentioned on the screen. It would appear that adventurers will have to search a place many times, until the text tells you that there are no more objects —

very unconventional. If you can cope with that there are still more idiosyncracies; you cannot "get dog", but you can "get the dog". The parser seems to be very narrow and limited. That is a pity, as it adds difficulty to an already complex task.

In a short time Mrs Clumpet from the British Embassy telephones, giving you an urgent message, the location of a secret agent you must contact and a password. A glance at your newspaper gives you additional assistance. Having eventually found your way from your apartment you have a choice of walking or taking your car; you soon find which is the better choice.

If you can avoid being arrested by the KGB and thrown in jail, eventually you will cross the river to the village. There, in a cafe ... well, perhaps I had better leave you to discover.

You are sitting at a table in the Red Cafe  
 It is very busy  
 A smartly dressed man with a Newspaper is to your left  
 A peasant to your right

Obvious exit  
 You can see

You are in the lounge in your apartment  
 There is a Sideboard to your left  
 There are drinks on the Sideboard  
 The kitchen door is open

Command > n  
 Command > i

Obvious exits are > North  
 You can see ,telephone

You have ,k  
 Command >

Command > an  
 "It is Mrs C  
 "Its very un  
 "The KGB thi  
 "They are go  
 "Go to the R  
 "Your passwo  
 He will answe  
 The line goes

Command >

You are on top of the cable car.. Its a howling gale  
 You can hardly see anything.. The blizzard is appalling  
 The Pulley wheels are squealing  
 Briefly....."You have a problem !!!"

Obvious exits are > None

The car is moving faster.

The dog has starved to death !  
 Your Dog's Ghost is with you...  
 Command >

graphic display of a vortex and, having pressed a key on request. It is divided into two parts. The upper one-third gives the location description and the lower two-thirds your playing area for inputting the commands.



**O**ne wonders why we are all so obsessed with time. Technology enables us to do so many things in a fraction of the time needed not so long ago and still we are not satisfied. Not only must it be done faster but we still do not have enough time. It is similar to another strange modern attribute that wherever we are, we want to be somewhere else.

Some years ago the owners of a new New York skyscraper office block had a continual string of complaints that the lifts were too slow in taking staff to their floors every morning; the wait was of the order of one-and-a-half minutes. The consulting engineers suggested homing on a different floor; that would save only one to two seconds, using high speed lifts – very expensive; and sinking another liftshaft – even more expensive. The answer came from a firm of operations research consultants – the psychologist.

### Complaints

He proposed full-length mirrors be placed round the ground floor lift areas and the complaints ceased. The girls were using the time to check their appearance and the men to look at the girls without it being obvious that they were doing so. Suddenly the 90 seconds became unimportant because everyone had something to do.

This may give a clue to the search for ever-increasing computer speeds; what is worse than doing nothing but looking at a blank VDU screen waiting for a program to load or for data to be found? Ten seconds becomes an eternity.

Because of the emphasis, both in the magazines with *Quanta* and the other organisations, on technical matters it is easy to forget that the QL was intended originally for the business market. It almost made it. You will remember the ICL One Per Desk and other configurations designed for business. Certainly, the QL never succeeded in the mass business market but there are many organisations, especially the smaller ones, which have used the machine or its Thor derivative for many years and are still happily doing so.

I have available a QL, Thor,

# Do we need to go faster?

**Tony Neilsen considers what is really required from a computer system for business.**

ST, PC and an Archimedes but if I need to do a job quickly and with confidence I immediately switch to the QL. The QL is kept on all the time, running *Taskmaster*, so all I have to do is 'press the <Enter> key' – much faster. It is this need for speed with which I wish to deal this month.

The 8-bit data bus of the 68008 chip in the QL means that processing times must be longer than those machines using the 68000 or, for that matter, a PC running a 386. So how important is this processing speed and what should we pay for it? To answer the question, it is helpful to consider the areas in computing which affect our ability to use the machines, *inter alia*:

1. Initial boot time from switching on to being able to load or use our first program.
2. Time taken to save the results of one program and start another.
3. Actual loading times of programs and data from external storage.
4. Keyboard input times, i.e., entering new data together with the time needed to decide what data to input and how to do it.
5. Time needed to print or display finished output.
6. Time needed to decide which program is best to buy, and use for the task in hand.

The IBM PC is the most popular machine for business use although it does not score heavily in any of those areas, except in the variety of programs available and possibly the sophistication of programs. While cost of the systems and programs is really another topic, the PC scores heavily in the high price area as well.

The PC has always suffered from its awkward and bulky operating system which is difficult to learn but, because of its popularity, various devices and techniques have been designed to overcome, at least partly, those disadvantages. A hard disc is essential, so essential that the machine is almost unusable in business without one. Program loading times would otherwise be too long. Backing-up a hard disc is costly and/or time-consuming. Networking is likewise a costly exercise, as a file server and special software is the only practicable way of doing it.

### Fastest

The Archimedes is far and away the fastest machine of those I have mentioned but its operating system is so difficult from the point of view of business that few people, so far as I know, have written anything for it – except me, and those programs are sitting in the bin.

The ST, in theory, is the one machine which could give the QL a good run for its money but it has suffered from its success as a games machine; networking and multi-tasking, which, in theory, are possible, are rarely attempted. Strangely, the ST is very popular for use in emulating other machines; Jochen Merz offers an effective QL emulator and a new hardware PC emulator has just been announced.

Which leaves us with the QL – almost certainly the ideal business machine. Multi-tasking and networking are built-in. There is no need for expensive software to drive those facilities. *Taskmaster* and Tony Tebby's *Toolkit II*

will scarcely break the bank of even the smallest business. The original criticisms of the machine – the Microdrives, lack of floppy and hard disc, operating system weaknesses – have all been solved; even the spongy keyboard. Programs to cover all the main business areas were even free with the machine.

The Psion suite is not the fastest set of programs available but any lack of in-built processing speed is more than offset by the ability to switch from one to another and even run more than one 'copy' of a program at once, or to leave one program printing while providing input into another.

The take-over of the intellectual rights of the QL by Amstrad brought direct development to a halt but David Oliver and his associates have gone a long way towards extending and improving it with the Thor. Thor International is clearly not having an easy time as I have not received one reply to my correspondence with it and PM Engineering has apparently ceased trading. What a tremendous opportunity Amstrad missed.

This is a good place to emphasise the comparatively minor computation necessary with business applications. A + B, A – B, occasional A ★ B and the very rare A/B can scarcely be called complex computation. Volumes are the problem with business applications and most of these volumes need to be keyed-in by hand; that is where the time goes and that is what costs business most of its computational money.

### Correction

VDU operators are not cheap. They are human beings, which means errors are inevitable. How long does it take to locate the errors and correct them? It is for the programmers to include error-detection routines – the computer has no clue whether the data is correct or incorrect. Business also needs some protection against deliberate errors – sometimes known as fraud. Can the systems and programs deal with this and how much time will be involved?

Strangely, and this may be because computers are not usually programmed by



accountants, many accounting programs do not allow direct correction of entries; corrections have to be made by means of correcting entries which produce a deal of clutter in the final printouts. If a 'correcting entry' is done incorrectly, the mess becomes horrendous. I assure you that this happens often. The reason given for this restriction is the possibility of manipulating the data in a fraudulent fashion if direct correction of computer entries were allowed, i.e., too much of the processing is within the machine, resulting in the need for audit trails.

### Fraud

The time-consuming operation of audit trails and correcting entries is, or should be, unnecessary. In my experience those wishing to perpetrate fraud will do so and are cunning in using whatever checks have been built-in to cover their activities.

The approach to programming accounting and related applications will be the subject of future articles. The purpose

of this one is to show that the QL, far from being a slow machine within the business framework, is, when programmed properly, one of the fastest. Multi-tasking alone is worth a 40MB hard disc and networking permits a number of operators to work at the same time on the same files. Careful programming can offset the slow line speeds of the QL. In real life there are only a few special applications – stock control is the major area – where networking is essential. Most applications should be under the control of one person; that way responsibility for errors and fraud can clearly be allocated. Certainly, cash and bank files should never be available on a networked basis unless we are in banking or a similar type of business and then very stringent control procedures are essential.

Salesmen are a peculiar breed and so are businessmen. So often do the latter fall for the bait put out by the former. The reliability of a 'name' . . . . .; benchmarks prove . . . . .; much better to

have a file server . . . . .; this system will expand as you expand . . . . .; will you be buying this system or renting . . . . .; the software will be modified by the programmers – you see it has all been written in C – at no extra charge. Those sales techniques work and no wonder when one considers the commissions paid. How much commission can Sector Software, for instance, afford to pay a salesman for selling a copy of Taskmaster?

At least we can establish that the QL can and does do business applications and probably faster, more effectively and cheaper than any other system. It has far-reaching support by software houses in the U.K. and overseas. I believe that it will continue to go from strength to strength so long as the machines remain available.

### Elusive

Time is an elusive commodity and means different things at different times. Some years ago, in the days when the TRS-80 was 'the' machine a client of mine used to close his factory

for two weeks each year to take stock and recalculate his costings over a very large range of items. So I wrote a program for him to re-calculate all his costings using a TRS-80. The whole job was completed in less than half a day. Once the new material prices had been input, the machine had to search the product file to locate those items which used the material. After the first euphoria at using a computer the owner became annoyed at the length of time the machine appeared to be doing nothing. The TRS-80 used to spend a good deal of time on 'garbage' collection. He was subsequently sold a much more expensive system, which saved a further half an hour. I now do a similar job for another client using a Thor, which recalculates all the costs as it prints them out. Do we really want to go any faster and if so, why?

*QL World hopes to follow this article with a series of Archive routines for accounting.*

# text<sup>87</sup>

## The new Version 3.00 for the '90s

**text<sup>87</sup>** Version 3.00 builds on the performance and reliability of previous versions to offer today's state-of-the-art environment for document production. There is simply no comparable product for the QL, and in many respects it out-performs industry-standard PC word-processors. This fast, versatile program has been vastly enhanced, taking into account many suggestions from already satisfied users, to offer more power and flexibility for the occasional user and the professional alike.

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- \* The user interface has been enhanced even further. More information is provided on the screen on menu selections and current program settings. As an example of improvements, when a number is requested, the default value can be selected with a key-press instead of entering the whole number.
- \* More flexible editing and text manipulation options. Documents can be merged with one command. Text attributes can be globally modified (for example change all or selected underlined text to italic). Easier control of pagination and layout especially for long documents.

All the above are improvements to an excellent program with many advanced and user-friendly features developed over the years. **text<sup>87</sup>** Version 3.00, as its predecessors, is still the vital upgrade for any QL system.

**founttext<sup>88</sup>**, the flexible graphic printer driver for **text<sup>87</sup>** offers 32 high-quality founts in different styles and sizes up to 72 pixels high. You can use graphic founts without the limitations in text editing and document size imposed by other desktop publishing programs.

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**2488**, the state-of-the-art dedicated text-mode printer drivers for Epson, NEC and Star 24-pin printers. With these drivers, **text<sup>87</sup>** is the only QL program that can use the advanced features of 24-pin printers such as multiple type-faces, proportional spacing, micro-justification, double-height, double-width shadow and outline modes.

**typeset<sup>89</sup>**, includes a range of drivers for laser printers. Please write for details.

**text<sup>87</sup>** requires at least 128K memory expansion (256K with **founttext<sup>88</sup>**).

An independent telephone support service including an excellent step-by-step tutorial disk is available from Mr Terry Harman on 0604 842875.

### Software is available in English, French and German

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# SOFTWARE FILE

## QCAL + ECAL

### INFORMATION:

**Product:** QCAL/ECAL  
calendar programs  
**Price:** £13.95  
**Supplier:** Sharp's, Box 326,  
Mechanicsville, Virginia  
23111.

I have always been unimpressed by Personal Organisers, never having seen the supposedly revolutionary advantages offered by what has always appeared to me to be nothing more than a loose-leaf diary. Gadgets, and especially computerised gadgets, are another matter. The house is full of them. Two programs recently sent to me from software producer Sharp's/Softshoe offered to provide some of the facilities of a Personal Organiser in the guise of a QL program.

QCAL is a multi-tasking calendar which can be called up by entering the SuperBasic keyword QCAL or by loading it as a multi-tasking job accessed by the usual CTRL-C key combination. The display takes the form of a conventional calendar layout for a single month. The default is determined by the current setting of the QL internal clock, which on my computer is usually set to January, 1961. The first disappointment was that QCAL did not allow me to alter the clock setting, forcing me to return to SuperBasic to use the dreaded SDATE command.

Navigation through the years is remarkably easy. The left and right cursor keys move to consecutive months, while the up and down cursor keys move year by year. Larger leaps through time could be made by pressing SHIFT and the up or down cursors which moved the calendar in the

### SHARP'S INC. Executive Series Activity - 1989 - Calendar

#### SEPTEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
						!Call caterer !Call Ins. Co.
3	4	5	6	7	8	9
!Party at Sharp's						
10	11	12	13	14	15	16
!Call Sharp's !Lunch w/Mark !Call bank			!Call Bank			
17	18	19	20	21	22	23
					29 !Renew QL World	
24	25	26	27	28	29	30
!Comp show			!Kim's Brthday !Call Bill			

Software & hardware for the QL and Z88 computers

#### Special Notes:

### Mike Lloyd has a blind date with a calendar.

desired direction by no less than five years. This is clear from the main display but a help screen is provided which expands only slightly on the subject.

An alternative method of time shifting is offered by pressing N and entering the required month and year using a numeric format. All dates between the adoption of the

Gregorian calendar in 1753 and 3999 are valid.

QCAL is an inconsequential little utility which felt as if it should belong to a suite of routines rather than face the jungle of competition alone. It occupies 16K of valuable RAM and for some unspecified



reason you must have Super Toolkit II present. It multi-tasks only to the extent that it can be activated from Super-Basic; it cannot overlay a Quill screen. Fatally, it crashes when the "screen redraw" option is selected more than once.

Provided on the same disc as QCAL was a potentially more powerful utility, ECAL, an Event Calendar. This program allows users to enter brief notes for appointments, birthdays and so on and it can also print-out a calendar for a chosen month, including any pre-entered events. Once again Super Toolkit II is essential, as is a printer capable of printing in condensed type.

While the program is loading an attractive frontface is displayed. This is superseded quickly by a less attractive menu which asks for a number to be entered, followed by a press of the Enter key, which is perhaps the least professional way of managing a menu.

A file is required for each year in which there are events to be recorded. Template files for the next few years are included on the medium and a program to create more tem-

```

5 WINDOW ac:8+20, dn:10+24, Xpos,Ypos 160 INK#2, 7: PAPER #2, 0: UTU
3 PAPER 0: CLS 170 Draw_Undo 54, 20, 32, 16, 0, "MAIN :
3 END DEFINE
3 DEFINE PROCEDURE Main
5 OVER -1
3 BLOCK Cwidth:8, 10,
3 OVER 0
3 END DEFINE
3 DEFINE Function Bar:
5 Local Loop, Key
3 REMark Values for C:
3 must be set previous
5 REPEAT Loop
3 Mark 7: Key = COL
3 Years / SHIFT + Years * 5
3 Month / N Enter date
3 Press F1 for help
3 SELECT ON Key
3 = 200: R = (R - 1) MOD Rmax
3 = 216: R = (R + 1) MOD Rmax
3 = 192,253: C = (C - 1) MOD Cmax
3 270 DEFINE PROCEDURE Hue (col)
3 275 PAPER col: INK 7% (col/4)
3 280 END DEFINE
  
```

Softshoe QL Calendar

1961 JANUARY 1961

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

plates is bundled in the package. Once you have identified a year, all dates are assumed to be in that year.

The most interesting menu option allows users to enter events associated with given dates. Only three events can be linked to a particular date and each event must be described in 16 characters or fewer. Those severe restrictions are imposed by the need to fit a week's worth of dates in the width of a sheet of A4 paper using condensed typeface. Despite the limit on daily entries the program is content

to allow users to enter as many events as they wish for a single day but the program crashes if a printout of the calendar is requested subsequently.

The program asks for dates to be entered in the English format of day first followed by month, each as a number, followed by Enter. Users then type the description of the event, after which they are prompted to enter another event. Nothing very user-friendly or sophisticated here.

Users are not told how many events are already in existence for a particular day, so the

crash described is likely to be a regular occurrence. It is not possible to delete an entry, although you can edit an unwanted event to a blank string.

Having entered events the next step is to print them either to the screen as a list or to the printer as a given month. Neither was very satisfactory. The screen list showed the "deleted" blank strings and listed each day's events in reverse order. The printed output is no different in function from a glossy office calendar.

The program has no search facilities, regular occurrences — for example "Rowing Club" for every Thursday — have to be put in one by one for each date, and holidays, lighting-up times, phases of the moon and all the other things which normal calendars show are absent. Amateurism extends to the simple printer drive — "Enter '999' to finish" — but by that stage I had ceased to care.

QCAL and ECAL are poorly-thought-out, indifferently implemented, prone to crashing and of little practical value.



## © FLEET TACTICAL COMMAND

"A New Concept"

### Overview:

Fleet Tactical Command is a realistic new, sophisticated, Real Time 3D Naval Strategy game written entirely in machine code that is aimed at an older user.

It has been designed to be played between two computers via network, serial or modem links or may be used on a single computer (for practice perhaps).

The programme will run on a basic 128k QL.

The comprehensive two user package includes an instruction manual, navigation aids, a selection of charts, Scenario Logs etc., and automatic free FT-CommClub registration for 1 year.

Over a period of time the package will become available on other popular computers, the object being that any combination of two computers may be used.

### The Scenario:

Set in a 1000 x 1000 square mile expanse of ocean within which there are two anchorages initially used by yourself and the enemy, and two neutral anchorages with repair/replenishment facilities.

It is a time of international conflict. Your shipping is being repeatedly harassed within these waters. The Government has declared a Total Exclusion Zone for this area. You have received a signal from Admiralty commanding you to take any necessary measures in order to enforce the Exclusion Zone and thus taking control of all anchorages.

The time taken to enforce the Exclusion Zone will be determined by the strategic skill of the opponents, certainly taking many hours to come to a conclusion.

### Responsibilities:

As the Fleet Tactical Commander you are responsible for:

The initial selection of sixteen ships; independent control of each ship either by transferring to, or sending signals; Ship's deployment, navigation, damage control and armament control/operation etc.

Ships Available are:

Strategic Nuclear Submarines \*  
Anti Submarine Frigates  
Guided Missile Destroyers  
Cruisers  
Battleships  
Tankers  
Replenishment Ships  
Minelayers

\* Submarines are able to dive and have an operational periscope.

Ship's Armament:

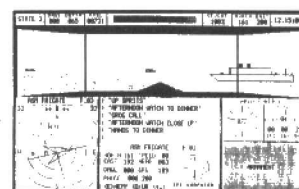
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Or: Please debit my Access/Visa Credit Card No.: \_\_\_\_\_  
Expiry Date: \_\_\_\_\_  
Signature: \_\_\_\_\_



**A**ny serious QL user will have some interest in another user's system, especially if it contains some uncommon units, and John Acielo's system is a striking one. A look at the pictures will tell you that he is not an average user. He obviously has more electronics knowledge than most of us; he must also be very practical in the mechanical sense, to get all that equipment mostly into one box and make it work.

Acielo wrote because he thought other users might be interested in his system. He enclosed the pictures printed here to show how he "made my QL look a bit professional." His list of the add-on component parts of the system reads rather like a Christmas wishes list to Santa Claus:

- 1) CST Ram-Plus 512KB memory board
- 2) QEP III EPROM programmer board
- 3) 150-watt switching-mode power supply
- 4) MicroPeripherals disc interface with QFLP ROM
- 5) QL circuit board and bottom casing
- 6) QTalk speech synthesiser
- 7) TEAC single 360KB 5.25in. disc drive
- 8) NEC single 720KB 3.5in. disc drive
- 9) PC-type case

PC/XT-type keyboard; Yamaha MSX 8020 monitor with swivel-&-tilt stand; Epson LX-80 DMP printer; 10-watt stereo audio amplifier; QIMI mouse interface with battery back-up clock; Miracle serial-parallel interface.

The QL was acquired in 1985 and is of hardware level D15, with JS ROM chips and Issue 6 circuit board. That will not mean much to many users but the description indicates that the QL was one of the later ones; there cannot be many with a hardware level later than 15 and the JS ROM was the last in the line fitted to QLs for the U.K. market.

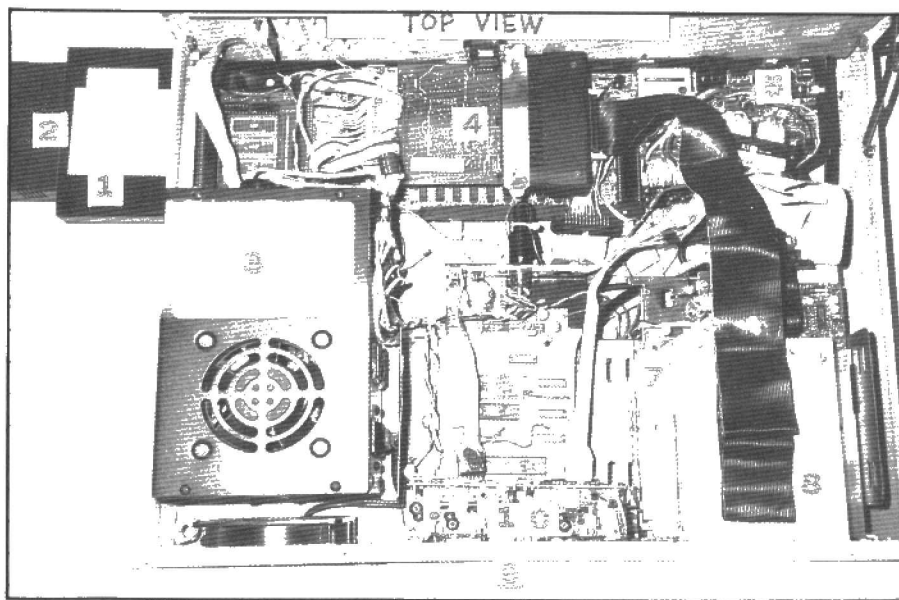
It is interesting that Acielo goes into a fair amount of detail about the hardware but says nothing about what software he uses other than "mostly... word processors, spreadsheets and graphics." He must fit into the category of hacker. The QEP III EPROM programmer is used both at home and at work; from his address, Acielo works for a major computer company and definitely it is not Sinclair.

## Making a case

The construction involved finding a place for most units inside the PC "clone" case, which is enormous by comparison with the QL but shrinks rapidly when used to house a large power supply and two disc drives. The bottom part of the QL casing was retained and the QL was mounted on the bottom of the box (5); the re-set switch can be seen to the right of 5 in the photograph. The Microdrives were removed and mounted at the front, middle of the box (10 in the photo). That relocation may well ensure the drives work

# ONE MAN'S SYSTEM

■ Bryan Davies describes the unusual QL system of reader John Acielo.



much better than in the original location; there is no distorted plastic casing to misalign the cartridges and no heatsink to roast the tape.

A slot was made at the left rear of the box to allow peripheral boards to be plugged into the standard 64-way expansion connector on the QL circuit board. The CST Ram-Plus 512KB memory expansion is fitted here (1) and, since it has no extension connector on its other end, the QEP III EPROM programmer is plugged into that (2). This does leave some important "machinery" sticking out – the perpetual QL fan's bugbear, perhaps a practical arrangement which avoids the necessity to open the box to fit different expansion units.

Some readers may remember the comment in an earlier article that unbuffered expansion adapters are not really a wise investment and will be interested to know Acielo has made his own unbuffered expansion adapter – the bundle of ribbon cables to the left of 4; presumably it works well, since he does not say anything is wrong with it. A point to make is that the success or failure of unbuffered expansion units depends on the design of the circuitry on those units; CST, for instance, realised the problems of using the 64-way

connector and made sure its units worked properly through it.

The MicroPeripherals disc interface (4) plugs into the adapter. All wires on the adapter are connected in parallel with the QL 64-way connector, except for the SPO to SP3 "peripheral select" lines. CST gave advice on how to connect those lines which should allow 16 peripheral devices to be connected. This is the table Acielo supplies to explain his connections:

## EPROM plea

In the table, "O" indicates 0V, or a ground/earth connection, and "1" indicates 5V, in-series with a 1 kOhm resistor.

All the add-on devices suggested there was a need for a better power supply than the original Sinclair one and the 150-watt unit (3) fitted handles all the 5V +12V and -12V needs of the system. There is a small additional power supply to provide 9 volts for the Microdrives and the QEP III. If you think that using a switching-mode power supply gets rid of lock-up problems, Acielo would disagree. He still got frequent lock-ups, when other appliances were switched on and off, after this power supply was fitted and had to resort to fitting an AC voltage regulator and several "power cleaners" – RF and EMF.



While they reduced the number of lock-ups they did not prevent them. You have to be fairly serious to tackle replacing chips which are not in sockets but he took the plunge and replaced all the RAM chips on the QL circuit board – 16 of them – and the lock-up problem disappeared. Acielo says he never has a lock-up now, however long the system is left on.

The 10-watt stereo audio amplifier is used to amplify the sound output from the QL and from the QTalk unit (6). The latter is rather a rarity; from what little I have heard about it there is a fair amount of potential in the unit but the manufacturer in New Zealand apparently decided it was not a sensible commercial proposition for it to continue trying to sell it in the U.K.

The disc drives are in the conventional PC location, at front right of the box – 7 is the 5.25in. drive, at the bottom, and 8 is the 3.5in. one. At front left, immediately in front of the power supply, is what looks like an additional fan; there is one in the top of the power supply case by the look of the aperture there. The top of the PC box hinges up for easy access.

Acielo ends his letter with a plea for help on the EPROM expansion for the CST Ram-Plus board. He bought a kit for it and fitted the chips supplied but had no success operating it. He needs to know the type(s) of EPROM which can be fitted. His final note is that he hopes we "will still support (the) QL for a long time"



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### Continued from page 13

assumed. The Thing name is the same as the file name but the part up to the first underscore is stripped off. The manual says Thing names must be between three and 12 characters long but longer names were accepted.

The command THINGS gives a list of all the Things in memory, on any Basic channel. TH\_USE is a function which takes the name of a Thing and returns its address or a negative error code. TH\_USER lists the number and tag of each task using a specified Thing.

If a Thing is loaded from a task file it may be possible to run it as a task, with the code in the Thing area shared between several tasks. In this way it is possible to have several copies of the EPROM Manager running at once but the 'shared' code is only 3K long. This feature is most useful if you want to run several copies of one large Q-Liberated task concurrently.

### Initialisation

The TH\_EX command works only with re-entrant tasks, so it will not run Turbo or Supercharged tasks which release memory from the code area to allow extra data space after initialisation. You can TH\_LOAD such tasks but TH\_EX gives a 'bad parameter' report if you try to execute them.

TH\_FREE is used to 'release' a Thing when a task no longer needs to use it. TH\_FRMV will flush out a Thing along with any tasks using it.

The 'Thing' extension is a good idea but it is rather late on the scene. As the manual notes, ROM files "may be declared to be a Thing but there is no sense at the moment to do that, as the

**"The EPROM Manager assembles a ROM image from files on disc or microdrive. A control file lists all the component files."**

concept of Things is new and there is no resident extension which supports it." The standard QL does not allow access to Things unless programmers write their own code to create, find and use them.

QJump uses and allows access to Things from Hotkey version 2.03 but other publishers have been slow to follow. From version 2.04 Turbo has used a Thing to communicate between compiler passes. This works on the QL and Thor but it uses the rival CST/Dansoft standard, so the

Thing is invisible to software which follows the QJump standard. Turbo developer Chas Dillon had little choice, as commercial rivalry means that QJump-derived software is incompatible with the Thor.

QL World MEM extension works much like a Thing manager. Shared areas of memory can be reserved and discarded automatically or manually by any mixture of tasks. The MEM code is relatively concise and compatible but areas are identified by number, not name, and limited to a size less than 32K, in the July DIY Toolkit version.

### EPROM space

The EPROM Manager is worth having if you have an EPROM programmer and have not already bought the Liberation RPM. It is annoying that it does not check that files will fit the EPROM space available, especially as the manual is short of precise detail about the data added to ROM files. I was disappointed that the manual did not explain how Things might be accessed from machine code.

The Thing Manager is most useful if you make extensive use of Hotkeys and other features of the QJump Pointer environment. At £18.75 including airmail delivery the package is reasonably priced but unlikely to set the world on fire.



# SOFTWARE FILE

## QUALSOFT TERMINAL EMULATOR

### INFORMATION:

**Program:** Qualsoft Terminal Emulator

**Supplier:** (U.K.) T.F. Services, 12 Bouverie Place, London W2 1RB. Tel: 01-724 9053.

**Price:** £30 for the whole package on mdv or 3.5in. disc.

Daniel Baum gets to grips with a comms program which does a good job but has a poor reference book.

The Qualsoft file transfer package is a hardware/software suite comprising a cable and programs for the QL, Atari ST and IBM PC. Each item may be ordered separately depending on what computers and software you already have. The system I ordered consisted of the cable and software for the QL and ST.

The cable with which I was provided is of a reasonable length but the ST plug has an unfortunate tendency to come apart when you try to take it out of the socket, so it is better to prise it out with a screwdriver rather than to pull it by the plastic.

The QL program is a cut-down version of a full-scale comms program produced by Qualsoft with such functions as auto-dialling and phone-number directories disabled, while the ST program is a full functional terminal emulator called STArTERM, with all its options left intact.

The programs arrive in a standard plastic wallet, together with four pages of instructions for the QL version, which are also provided as a Quill \_doc file, and with a message saying that the Atari instructions are on the disc.

The documentation is poor; these are programs which need a very large amount of setting up and what explanation there is of how to get the programs to talk to each other is over-concise and badly-organised. Even technical people if they are not well-versed in comms-speak would have difficulty setting up the program from this documentation, so I shudder to think how a beginner would manage with it.

I will explain how to set up the program so that it will talk to an ST and to a PC, which is really all that needs to be known

about it, and I hope I can save someone a few hours' poring over the manual.

The PC I use is the ST running the PC-Ditto IBM emulator and *Procomm+*. When you first boot the QL program from the master disc, automatically it will make a self-booting copy of itself on to whatever medium you are using, although if you wish to use the program under a multi-tasking manager such as QRAM or Taskmaster you have to carry-out a further installation using the Backup command in the terminal command menu.

On booting your installed program you are greeted by the main menu screen. Almost all the options in the menu give a "Command not implemented in file transfer version" message, although it is from here that you save your set-up once you have the program working. You can also get a directory of your disc/cartridges from here. To enter the terminal you have to press Escape. Once in the Terminal screen you press F3 to access the terminal menu, from which the usable functions are available.

Pressing <F3> accesses the interface sub-menu from which the basic communications parameters such as baud rate and so on are set up. To talk to a PC or an ST the following parameters work and there is no need to use others:

**Mode** - HW/ECHO

**Baud** - 9,600 to send to the ST or PC, 4,800 to receive. The QL seems to have difficulty receiving at 9,600 baud from STArTERM, although from *Procomm+* it seemed to work, even though it was not totally reliable.

**Parity** - Space

**I/F** - ser1h. This one took some time to figure as the default is ser2 but the cable is

wired for ser1. This vital piece of information was in the help screen and not in the manual. That means that if your printer is serial, like mine, you have to keep connecting and disconnecting the two cables and usually forgetting to do so. It also means, more seriously, that you cannot print through ser1 from a simultaneously-running program such as Quill while the terminal is running, as it holds it open constantly for its own use.

**H/Shake** - CH/ECHO

The parameters for STArTERM are:

**Mode** - Remote

**Baud-rate** - whatever you are using on the QL.

**Parity** - space.

**Flow control** - RTS/CTS

**Stop-bits** - 1.

The line/port parameters for *Procomm+* are:

9,600 baud (or whatever the QL is using)  
No parity - space parity gives gobbledygook

8 data bits

1 stop bit

COM1 or whatever your serial port is set up as.

After some trial and error I found that *Procomm+* must be set to no parity to work, although STArTERM at no parity does not work.

There are two ways to transfer information from one computer to the other - via the terminal and using the Xmodem file transfer protocol. The first is useful for text files such as those produced in *Editor* which you want to transfer to the ST/PC in



a form which can be used in an ST/PC text editor or word processor, as the program will translate the LF characters used by the QL as new-line characters into the CR/LF used by the ST/PC. The second is useful for any other kind of file such as executable files and SuperBasic programs.

To send a text-file from the QL, first set up the other computer to receive. The Transmit command (<F3 T>) will then transmit any text file. It asks for the file name which has to be typed-in. I find it useful for this and the other commands which ask for file names to use the QRAM file menu to select a file and then switch back to the file transfer program and insert the name automatically after the prompt by pressing <ALT/Space>.

Note that any default file name which appears at the prompt must be erased first and that there is a limit to the length of file names allowed, so that if, like me, you like long file names which tell you what is in a file – QL\_World\_second\_letter) – you will find yourself renaming files. That is a serious limitation.

To receive a text file on the QL the command is Log (<F3 L>), which asks for a file name. You give it the name of the file into which you wish to receive text and then press Enter. You then tell the other computer to transmit the file and when it has finished you press <F3 L F5> to close the log file on the QL. The Translate

menu (<F3 O T>) gives the following options:

**Language** – allows English, Swedish or Norwegian; translates certain characters into the Scandinavian ASCII equivalents.

**Terminal CR in and CR out** – determine how line-feeds are interpreted on the screen and from the keyboard. These settings are not very important, as it is not very useful just typing on one computer and seeing it appear on the other, although this is a useful way of seeing that the interface parameters are set up properly.

**Transmit LF** must be set to CR/LF to transmit QL text to the ST/PC and have it retain its format.

**Log CR** must be set to LF to receive ST/PC text-files on the QL.

General files may be transferred using the Xmodem file transfer protocol. It sends any file exactly as it is on the sender computer, with error checking, so it is safe to send an executable program file and expect it to return intact and usable when you receive it back. That is the reason I bought the program, as I used it to keep back-ups on ST discs because my QL is Microdrive only.

The file transfer facility is accessed with <F3 F> which first asks for the file name. You are then confronted with another submenu with the following items:

**Direction** is send or receive.

**Header.** All QDos files have a 64 byte-header which supplies the operating system with information about the file. It is essential to transmit the header if the file is executable, i.e., if it multi-tasks, because otherwise when you try to receive it back it will no longer be recognised as an executable file. The QRAM file menu or the Toolkit II FTYP function will tell you if a file is executable.

**Timing** The program works well if you leave this at NORMAL.

After setting this menu you should set up the other computer to receive or send the file. Always set up the QL first, whether you are sending or receiving, because the transfer is always activated by pressing F5 on the QL. The program will count the blocks as it transfers them – each block contains 128 bytes – and when it finishes the files at both ends will be closed automatically.

There is one more important command in the terminal menu – Backup. It is used to make a copy of the program but it has two important parameters in its submenu:

**Multitask.** If you want to use the copy under QRAM or Taskmaster this must be set to YES.

**Directory.** Set this to auto-load if you want your set-up to load automatically after the program.

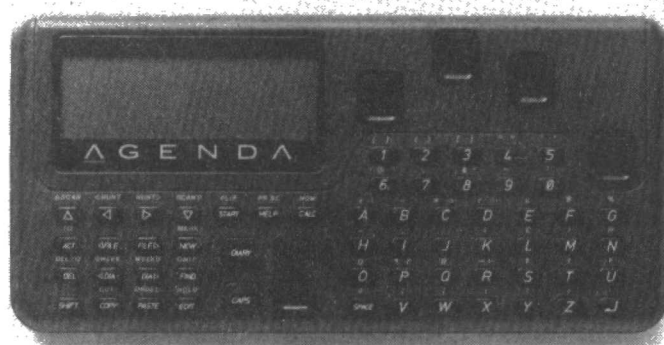
# QL

# SCENE

## NEW U.S.A. RELEASES

The Agenda Microwriter represents the latest generation of portable digital notebooks. Costing £195 for the basic model, the Microwriter weighs 275gm including batteries; measures 175 by 85 by 20mm. making it genuinely inside-pocketable, and has a four by 20-line, 80-character LCD display.

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tion file, calculator, alarm clock and built-in word processor.

The Microwriter can give and receive information via a PC or Apple Mac, has optional RAM storage cards for security back-up and off-line storage.

Other features included in the Agenda Microwriter are ROM

cards, numeric keypad and an alpha-betic, no QWERTY, keypad which is easy to learn and can be used one-handed for fast input.

For more information, contact **Agenda Microwriter Ltd**, 2 Wandle Way, Willow Lane, Mitcham, Surrey CR4 9AR. Tel: 01-685 0300.

## TurQey

After five years of planning, a new QL user club has been started in Istanbul, Turkey. The club has been established by six long-term QL owners who want to make contact with users in Turkey and other parts of the world. Meetings are held every Saturday for the discussion on SuperBasic, Qdos and new products, with tutorials on Qdos and the 68000. The group is also working on a Turkish version of the QL and upgrading Qdos to provide a new version with dual screen.

Users interested in making contact should write to **Bulent Artuz, Prof. Sitesi B/1, D/5, Etiler 80600, Istanbul, Turkey.** Local telephone: (1) 1655541.



THE

# P + R : O = G < S

If you have a program worthy of consideration, send it to 'The Progs',  
Sinclair QL World, Greencoat House, Francis Street, London SW1P 1DG.  
We pay for everything published at the usual page rates.

## Program of the month

### METAL EXCHANGE

by Andrew Thompson

The aim of *Metal Exchange* is simple – to make £100,000 by buying and selling metal stock. Just follow the program. It is not so easy as it looks; good luck.

```

10 REMark *****
11 REMark * Metal Exchange by: A.Thompson c1989 *
12 REMark *****
13 REMark To win, simply make 100,000 by buying an
14 REMark d selling metal shares
15 RESTORE :MODE 4:scr_init:initiate
16 REPEAT loop1
17 mon$(7)=mon$(7)+1:displayn:display:CLS £4
18 PRINT £4;\TO 13;"B - BUY SHARES"\TO 13;"S -
19 SELL SHARES"\TO 13;"N - NEXT WEEK"
19 PAPER £11,7:CLS £11:STRIP £11,2:INK £11,7:BORDE
20 R £11,2:PRINT £11:FILL$( " ",13);"PRESS APROPRIATE
21 KEY ";FILL$( " ",11)
22 REPEAT loop2
23 LET o$=INKEY$(-1)
24 IF o$=="B" OR o$=="S" OR o$=="N" THEN EXIT loop
25 ELSE BEEP 2000,200:REMark look out Elvis, I'm th
26 e new rock king now.
27 END REPEAT loop2
28 IF o$=="N" THEN week_end:IF mon$(6)>100000 THEN
29 GO TO 67:ELSE END REPEAT loop1
30 CLS £4:PRINT £4;\TO 12;"Please select commodit
31 y"\TO 12;"by pressing keys 1 - 5"
32 REPEAT loop3
33 k$=INKEY$(-1)
34 IF (k$>"0" AND k$<"6") THEN EXIT loop3
35 IF k$=" " THEN GO TO 18:REMark OH! NO! a GOTO sta
36 tement!!
37 BEEP 2000,64
38 END REPEAT loop3
39 CLS £11:STRIP 4:AT k$*2,2:INK 0:PRINT k$&".":ST
40 RIP 0:INK 7
41 IF o$=="S"
42 CLS £4:PRINT £4;\TO 10;"You own : ";mon$(k$+7);
43 " share";:IF mon$(k$+7)=1 THEN PRINT £4;"":ELSE
44 PRINT £4;"s.":END IF :PRINT £4;\TO 7;"How many d
45 o you wish to sell?":END IF
46 amount$="0":INPUT £11;"How many shares? : ";amo
47 unt$:IF amount$<"0" OR amount$>"999999" THEN BEEP
48 2000,0:GO TO 35:ELSE :IF amount$>mon$(k$+7) THEN B
49 EEP 2000,0:GO TO 35:REMark Another Goto, I'm crack
50 ing Up!!
51 CLS £11:mon$(k$+7)=mon$(k$+7)-amount$:mon$(6)=m
52 on$(6)+mon$(k$)*amount$:CLS £4:display
53 END IF
54 IF o$=="B"
55 max_share=INT(mon$(6)/mon$(k$)):CLS £4:PRINT £4
56 ,\TO 10;"You can afford : ";max_share;" share";:I
57 F max_share=1 THEN PRINT £4;"":ELSE PRINT £4;"s.
58 ":END IF :PRINT £4;\TO 7;"Please enter quantity t
59 o be bought."
60 amount$="0":INPUT £11;"How many shares? : ";amo
61 unt$:IF amount$<"0" OR amount$>"999999" THEN BEEP
62 2000,255:GO TO 40:ELSE :IF amount$>max_share THEN
63 BEEP 2000,255:GO TO 35:REMark I've got gotos on th
64 e brain!!
65 CLS £11:mon$(k$+7)=mon$(k$+7)+amount$:mon$(6)=m
66 on$(6)+mon$(k$)*amount$:CLS £4:display
67 END IF
68 END REPEAT loop1
69 DEFINE PROCEDURE week_end
70 FOR f=1 TO 5
71 intr=(RND(75 TO 125))/100:mon$(f)=INT(mon$(f)*i
72 ntr)
73 IF mon$(f)<50 OR mon$(f)>450 THEN mon$(f)=INT(R
74 ND(50 TO 200))
75 END FOR f
76 END DEFINE
77 DEFINE PROCEDURE displayn
78 UNDER 1:AT 0,20:PRINT "DATA":UNDER 0
79 PRINT \ " 1. GOLD Shares : "
80 PRINT \ " 2. SILVER Shares : "
81 PRINT \ " 3. IRON Shares : "
82 PRINT \ " 4. NICKEL Shares : "
83 PRINT \ " 5. LEAD Shares : "
84 PRINT \ " Your Money : "
85 FOR f=1 TO 5:AT f*2,30:PRINT "Own : ":END FOR f
86 END DEFINE
87 DEFINE PROCEDURE display:FOR f=1 TO 5:AT f*2,22
88 :PRINT mon$(f);": ":AT f*2,36:PRINT mon$(f+7);": "
89 :END FOR f:AT 12,22:PRINT mon$(6);": ":END DEF
90 ine
91 DEFINE PROCEDURE scr_init
92 OPEN £4,scr_:WINDOW £4,285,50,119,0:PAPER £4,0:
93 INK £4,7:CLS £4:BORDER £4,1,7
94 OPEN £11,con_:WINDOW £11,284,20,119,187:PAPER £
95 11,7:INK £11,0:CLS £11:BORDER £11,1,7
96 WINDOW 285,158,119,49:PAPER 0:INK 7:CLS:BORDER
97 1,7
98 END DEFINE scr_init
99 DEFINE PROCEDURE initiate:DIM mon$(12,10):FOR f
100 =1 TO 12:READ mon$(f):END FOR f:END DEFINE
101 PAPER 2:INK 0:CLS:CSIZE 3,1:PRINT "_CONGRATULAT
102 IONS_"
103 CSIZE 0,1:PRINT \TO 4;"__ You have completed th
104 e game in __"
105 PRINT TO 4;"__ ";mon$(7);": weeks. An average of
106 __"
107 PRINT TO 4;"__ ";INT(mon$(6)/mon$(7));": per we
108 ek. __"
109 PRINT \TO 4;"Press any key for another game":PA
110 USE -1:CLEAR:PAPER 0:CLS:RUN
111 DATA 290,250,180,130,90,100,0,0,0,0,0,0,0

```



# MENDISP

by Ian Jackson

**M**emdisp V3.3 displays a breakdown of how your memory is used. Run the hex loader, then type:

exec mdv1\_\_memdisp

To control the program, hold down simultaneously ESC + M + K to kill the program, or ESC + M + D to toggle the display on and off.

The bar at the right is divided into the following sections:

Green: RESPR area – may be empty.

Green: Jobs such as Memdisp, Editor, and so on.

Green: SuperBasic.

Red/magenta: Free space.

Green: Common heap – channels and so on.

Green: Qdos system variables and tables.

Green: Screen display (fixed).

The position and size of the bar depend on the display mode when you start the program. If you start the program in Mode4 you will not see it on a TV screen. The colouring adjusts itself as you change the mode.

# GRAVITY

by Ian Fisher

**T**his program models the behaviour of an object, according to the inverse-square law, in the Earth's gravitational field. The initial velocity, distance from the surface of the Earth and direction of movement are entered and the movement of the object is plotted. As many plots can be made as you wish; you choose after whether you want to clear the screen of previous efforts or leave the old plot(s) on the screen.

The facility is provided to change the scale at which the Earth is drawn, so that a close-up of the Earth's surface or, alternatively, a distant view, may be obtained. This scale may be changed whenever you choose to clear the screen rather than "plot-over".

Standard S.I. units are used throughout, i.e., metres and metres/second. The angle of direction is entered in degrees with zero pointing "east" on the screen.

## Example

For a quick and fairly self-explanatory explanation of why objects go into orbit and do not fall to Earth, choose a

scale which will allow you to see the whole of the Earth. Then, with direction zero and altitude of 1E6, try velocities of 1,000, 3,000, 6,000, 7,000 and 7,350.

```
100 REMark Memory display version 3.3
110 REMark by Ian Jackson May 89
120 :
130 ad=ALCHP(416): REMark Use RESPR if you don't have ALCHP
140 a=ad: hl$='0123456789ABCDEF': errflag=0: RESTORE
150 FOR i=1 TO 26
160 READ d$,check: sum=0
170 FOR j=1 TO 16: b=16*(d$(j*2-1) INSTR hl$)+(d$(j*2) INSTR hl$)-17: POKE a,b: a=a+1: sum=sum+j*b
180 CLS#0: PRINT#0,i: IF sum<>check THEN PRINT 'Error in line '220+10*i: errflag=1
190 END FOR i
200 IF NOT errflag THEN SEXEC mdv1__memdisp,ad,416,16
210 RECHP ad: REMark Omit this if you used RESPR above
220 :
230 DATA '6020000000004AFB000C4D656D646973',11097
240 DATA '702076332E3301000002807E00F00002',7609
250 DATA '80789EFC00082A4F70004E412C48700B',8906
260 DATA '74404E41740248422C2E00209C822B46',9215
270 DATA '0008780099CC51ED000641FAFFCA4A2E',16592
280 DATA '003467025C883A982B5000022C2D0008',5860
290 DATA '8CD5690000FA670000F64A2D00066B00',8605
300 DATA '0076363C03034A2E00346704363C0203',4878
310 DATA '740248422002206D0002380346433A04',5322
320 DATA '51C5223C00028000610000CC47EE0004',9365
330 DATA '221B588B7800610000BE221B610000B8',8990
340 DATA '38034644320C57C148813841C841221B',10805
350 DATA '7A03610000A23A03464551C5221B588B',10760
360 DATA '610000947800221B6100008C22136100',6459
370 DATA '008646438750700872FF760A93C94E41',14678
380 DATA '72017408612A6624720274406122661C',9040
390 DATA '72047440611A662C7000122D000601C1',7366
400 DATA '660A4A015AC101C11B4100066000FF4C',10761
410 DATA '701147FA0074174100064E414BEF0004',8819
420 DATA 'B4014E7508AD000000067203740461E0',9915
430 DATA '66DA70FFD055246D000294FC00803212',12070
440 DATA '0241FCFC00410002348151C8FFEE7005',15758
450 DATA '72FF76004E41928282C6B25562283E01',12728
460 DATA '9E406F22300190FC00803210C2438244',12545
470 DATA '308155476B1090FC00803210C2438245',13036
480 DATA '308151CFFFF24E75090100000000102',5724
```

```
1000 SETUP: CLEAR: c=6.5E6: dt=5: radE=6.37E6: sca=7E6: SCALE sca,-sca,-sca/2+c
1010 CLS: CLS#0: FILL 1: INK 4,0: CIRCLE 0,0,radE: FILL 0: findscale: CLS#0: INK 7
1020 INPUT#0: 'Enter initial velocity: 'v
1030 INPUT#0: 'Enter direction: 'theta
1040 INPUT#0: 'Enter altitude: 'alt
1050 vx=COS(RAD(theta))*v: vy=SIN(RAD(theta))*v: y=radE+alt: x=0
1060 CLS#0: PRINT#0: '<ESC> to abandon plot.'
1070 REPEAT trajectory
1080 IF KEYROW(1)=8: EXIT trajectory
1090 x=x+vx*dt: (x=0): y=y+vy*dt
1100 OVER 0: POINT x,y: OVER -1: POINT x,y: POINT x,y: r=SQRT(y*y+x*x)
1110 IF r<radE: CLS#0: PRINT#0: 'Plot completed. 'EXIT trajectory
1120 a=-4E14/(r*r): ax=a*x/r: ay=a*y/r: vx=vx+ax*dt: vy=vy+ay*dt
1130 END REPEAT trajectory
1140 dummy=KEYROW(0): PRINT#0: '\<SPACE> to plot over, other to clear.'
1150 IF INKEY$(-1)=CHR$(32): CLS#0: GO TO 1020: ELSE GO TO 1010
1160 DEFINE PROCEDURE findscale
1170 PRINT#0: 'Forward (up) goes closer, 'Backwards (down) moves away.'
1180 PRINT#0: '\<SPACE> when satisfied.'
1190 REPEAT choose
1200 key=CODE(INKEY$(-1)): SELECT ON key
1210 -32: EXIT choose
1220 -208: fac=.8: IF sca=1.98E6 AND sca*.8<1.98E6: NEXT choose
1230 -216: fac=1.2: IF sca=9E8 AND sca*1.2>9E8: NEXT choose
1240 -REMAINDER: NEXT choose
1250 END SELECT: sca=sca*fac
1260 IF sca<1.98E6: sca=1.98E6
1270 IF sca>9E8: sca=9E8
1280 CLS: SCALE sca,-sca,-sca/2+c: FILL 1: CIRCLE 0,0,radE: FILL 0
1290 END REPEAT choose
1300 END DEFINE
1310 DEFINE PROCEDURE SETUP: MODE 4: OPEN#8,scr_512x256a0x0: PAPER#8,4: CLS#8: FOR n=2,1,0: WINDOW#n,460,164,22,70: WINDOW#0,460,54,22,7: PAPER#n,0: INK#n,7: BORDER#n,2,0: CLS#n: END FOR n: END DEFINE
```



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